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DRAFT Terrestrial Wildlife Biological Assessment/Biological Evaluation

Pine Mountain Late Succession Reserve Habitat Enhancement and Protection Project

Upper Lake Ranger District, Mendocino National Forest
Lake County, California

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Contents

Introduction

Purpose

The purpose of this Biological Assessment/Biological Evaluation is to analyze the potential effects of the Pine Mountain Late Successional Habitat Enhancement and Protection Project(hereafter referred to as the Pine Mountain project) on federallyThreatened, Endangered, Proposed species and Forest Service Sensitive Species that are known or may occur within the project area. This document will determine whether the Pine Mountain projectmay contribute towards listing of Region 5 Forest Service Sensitive species.

Regulatory Framework

This BA/BE was prepared in accordance with Forest Service Manual (FSM) direction 2620, 2630, 2670, 2672, 2672.42 and meets legal requirements set forth under Section 7 of the Endangered Species Act of 1973, as amended [19 U.S.C. 1536 (c, 50 CFR 402.12 (f) and 402.14 ©; the Bald and Golden Eagle Protection Act of 1940, as amended; Migratory Bird Treaty Act of 1918 (as amended); Executive Order 13186 (migratory birds); National Environmental Policy Act, 1969; National Forest Management Act, 1976 (as amended);Northwest Forest Plan;and Mendocino National Forest Land and Resource Management Plan, 1995, as amended.

Location

The Pine Mountain project encompasses a 10,200 acre area of Late Successional Reserve (LSR), matrix, and private lands located within the west-center portion of the Mendocino National Forest's Upper Lake Ranger District (District). Lake Pillsbury lies to the northeast, Eel River to the north, and Little Round Mountain to the South. The District boundary is part of a section of the Pine Mountain project boundary to the west.

T17N R10W Sections 2-5, 8-11, T17N R11W Sections 1,2, 12, T18N R10W Sections 17, 20, 25-29, 32-35, andT18N R11W Sections 24, 25, 35, 36 on the Mount Diablo Base and Meridian.

Proposed Action

The proposed action for the Pine Mountain Late Successional Reserve Habitat Enhancement and Protection project includes prescribed fire and forest health treatments that focus on enhancing and maintaining vegetative communities for wildlife habitat. Health and biodiversity will be enhanced by ecological fuel reduction by reducing surface fuels, ladder fuels, and crown density in forest plant communities. In chaparral, ecological fuel reduction will retain, enhance, and protect portions of valuable habitat while reducing and modifying fire behavior through prescribed fire treatments.

Treatments in all vegetation types are designed to be site specific taking into consideration vegetation type, soil type, slope, aspect, forest health needs, and land allocation objectives. Treatments may be applied as prescribed fire only or in combination with hand or mechanical thinning, and piling and pile burning. Mechanical treatments will be followed by understory burning. Where prescribed burning is the sole tool used to reduce fuels several entries may be needed to reach desired conditions.

Table 1 –Treatments and associated activities proposed for the Pine Mountain Late Successional Habitat Enhancement and Protection Project

Table of Proposed Action	
Proposed Treatments	**Proposed Action**
Thinning <10 in. dbhand post-thinning prescribed fire	**3760 acres**
Thinning > 10 in. dbh and post-thinning prescribed fire	**1650 acres**
Prescribed fire within chaparral areas	**2420 acres[1]**
Shaded fuel break construction	**9 miles**
Use of existing undesignated roads[2]	**3.9 miles**
Reconstruction of existing undesignated roads[1]	**0.58 miles**
New temporary road construction[3]	**0.25 miles**
Designate non-system road as trail	**0.3 mi.**
Road decommissioning	**1.3 mi.**
Ghost roaddeletion[2]	**0.4 mi.**
Closure of non-system trails	**17.6 mi.**

[1] Not all 2420 acres will be burned. In order to create a mosaic of age classes burning would be conducted over several years and areas would be left unburned to maintain the oldest age class.

[2]These roads will be decommissioned after project completion.

[3] Ghost Roads are roads that do not exist on the ground, but are delineated on maps; they are frequently a map error.

A full description on the proposed action can be found in Chapter 2 of the Pine Mountain EIS.

Alternatives

Alternative 1 – No Action

While this alternative takes no action at this time, on-going activities such as routine road maintenance, fire suppression, and recreation may still occur in this area. This alternative serves as a baseline against which to compare to the other action alternatives. Under this alternative no fuels treatments, forest health, or reforestation treatments would be implemented to accomplish the purpose and need. The intent and the desired condition set forth in the LRMP and NWFP would not be achieved. While no costs

would be directly incurred with this alternative, future costs may include wildfire suppression and rehabilitation activities.

Alternative 2 – Proposed Action

See above section on Proposed Action and Chapter 2 of the EIS for detailed treatment prescriptions.

Alternative 3 – No new temporary roads

This alternative would follow actions proposed in Alternative 2, with the exception of creating new temporary roads (about 0.25 miles).

Alternative 4 – No commercial thinning in Riparian Reserves

This alternative would follow actions proposed in Alternative 2, with the exception of no commercial thinning in riparian reserves.

Alternative 5 – No commercial thinning in Units 3a, 19, 24b, and 33b (Northern Spotted owl nesting habitat)

This alternative would follow actions proposed in Alternative 2, with the exception of no commercial thinning in NSO nesting habitat (units 3a, 19, 24b, and 33b).

Species Being Evaluated

Wildlife species that were evaluated for potential effects are shown in Table 2.

Table 2 - Federally Threatened, Endangered, or Proposed wildife species and Forest Service Sensitive Species potentially affected by the Pine Mountain Late Successional Habtiat Enhancement and Protection Project. Source: (Offcial USFWS IPAC report date) and USFS 9/9/2013

Species	Designation	Habitat within project area
Northern spotted owl (*Strix occidentalis caurina*)	ESA Threatened	Yes
Northern goshawk (*Accipter gentilis)*	Forest Service Sensitive	Yes
Bald eagle (*Haliaeetus leucocephalus*)	Forest Service Sensitive	Adjacent
Pallid bat (*Antrozous pallidus*)	Forest Service Sensitive	Yes
Townsend's big-eared bat (*Corynorhinus townsendii*)	Forest Service Sensitive	Yes
North American wolverine (*Gulo gulo luscus*)	Forest Service Sensitive	No
Fisher (*Pekania pennant*)	Forest Service Sensitive	Yes
Pacific marten (*Martes caurina*)	Forest Service Sensitive	Yes
Fringed myotis (*Myotis thysanodes*)	Forest Service sensitive	Yes

Species	Designation	Habitat within project area
Foothill yellow-legged frog (*Rana boylii*)	Forest Service Sensitive	Yes
Western pond turtle (*Emys marmorata*)	Forest Service Sensitive	Yes
Karin's checkerspot butterfly (*Euphydryas editha karinae*)	Forest Service Sensitive	No
Willow flycatcher (*Empidonaz traillii*)	Forest Service Sensitive	No

Although there is no bald eagle habitat in the project area, they are evaluated in this BA/BE due to the proximity of the project area to adjacent habitat and bald eagle nests at Lake Pillsbury.

North American wolverine will not be evaluated in this document because there is no suitable habitat within the project area and the closest reported sightings are near Hull Mountain which is 10 miles from the project area. Wolverines uses subalpine and alpine habitats generally far from humans and human development (CDFW 2015, USFS 2004).

Karin's checkerspot butterfly will not be analyzed in this BA/BE because the known population is located on Hull Mountain, about 10 milesfrom the project area (Baughman and Murphy 1998).

The project area is outside the breeding range of the willow flycatcher. The willow flycatcher is a locally uncommon, summer resident in wet meadow and montane riparian habitats in the Sierra Nevada and Cascade Range (CDFW 2005).

Existing Environment

Current Conditions

Late successional reserves were designed to provide for the viability of the northern spotted owl and other species such as, but not limited to, northern goshawk, Pacific marten, and fisher that are dependent on older, mature forest habitats. These reserves are intended to maintain a functional, interacting, late-successional, and old-growth forest ecosystem (USFS 1995).

There are a variety of vegetation types within the Pine Mountain project area. The California Wildlife Habitat Relationship (2005) program identified 14 different vegetation types in a variety of conditions. Tables 3 and 4 demonstrate the acres of vegetation types and seral stages found within the project area (Silviculture Report).

Table 3 - Project Area California Wildlife Habitat Relationship(CWHR) Forest Vegetation Types & Seral Stage, Source: Silviculture Report

WHRTYPE CODE	Vegetation Type	Seral Stage Acres				
		Early	Mid	Late	Mature	Total Acres

WHRTYPE CODE	Vegetation Type	Seral Stage Acres				
		Early	Mid	Late	Mature	Total Acres
BOP	Blue Oak-Foothill Pine		1			1
BOW	Blue Oak Woodland		7			7
COW	Coastal Oak Woodland	9	6			15
CPC	Closed-Cone Pine-Cypress	11	18			29
DFR	Douglas Fir	67	35	35	389	526
MHC	Montane Hardwood-Conifer	142	404	726		1272
MHW	Montane Hardwood	179	907	479		1565
PPN	Ponderosa Pine	214	28	92	87	421
SMC	Sierran Mixed Conifer	509	527	1947	2264	5247
	Grand Total	1131	1933	3279	2740	9083

Table 4 - Project Area CWHR NON-Forest Vegetation Types & Seral Stage, Source: Silviculture Report

WHRTYPE CODE	Vegetation Type	Seral Stage Acres				
		Seedling	Young	Mature	Decadent	Total Acres
AGS	Annual Grass					127
PGS	Perennial Grassland					3
CRC	Chamise-Redshank Chaparral				208	208
MCH	Mixed Chaparral				740	740
MCP	Montane Chaparral				47	47
	Grand Total				995	1125

Past management activities and natural processes have resulted in increased tree densities leading to fuel connectivity between the lower and upper canopies and altered vegetation species composition by hardwoods being shaded out by conifers and a loss of ponderosa pine due to competition with conifer species. These conditions are contributing to declining forest health and density related tree mortality within stands susceptible to drought-induced tree mortality because of intense inter-tree competition for light, nutrients, and water. The overall effect impacts species diversity, contributes to a substantial increase in surface fuel loading and ladder fuel connectivity, and surface and ladder fuel conditions. There are higher concentrations of live ladder fuels, greater amounts of dead standing trees, and greater amounts of small diameter woody debris on the ground. When the large diameter pine trees fall out as individual or in clump concentrations, they take out some of the ladder fuel trees creating heavy surface fuel concentrations around the downed larger pine trees. As a result, the potential for the project area to burn at high severity, where most mature trees are killed, has increased dramatically. Wildfires under these conditions are larger, more intense, erratic, and difficult to control. Firefighter safety, ecosystem sustainability, and late-successional vegetation and wildlife species populations are all compromised under these conditions (Silviculture report).

Fuel loading within the Pine Mountain project area ranges from 4-75 tons/acre of dead woody material on the ground. Fuel loading is generally less excessive in young pine plantations, brush fields, oak stands, and areas that are recently burned but most areas have accumulated excess fuel not seen in a fire resilient system. Ladder fuels and crown bulk density also play a role in wildland fire behavior no matter the fuel loading levels. Fuel loading is directly related to surface fire spread and flame lengths (Fuels Report).

Crown Fire Activity (CFA) modeling projections indicate that crown fire, torching, and surface fires would be 24%, 51%, and 25%, respectively, under existing conditions (i.e., no treatments) within the Pine Mountain project area (Figure 1). Crown fires and torching, which make up 75% of the project area,

areknown to lead to mortality in stands (Fuels Report)

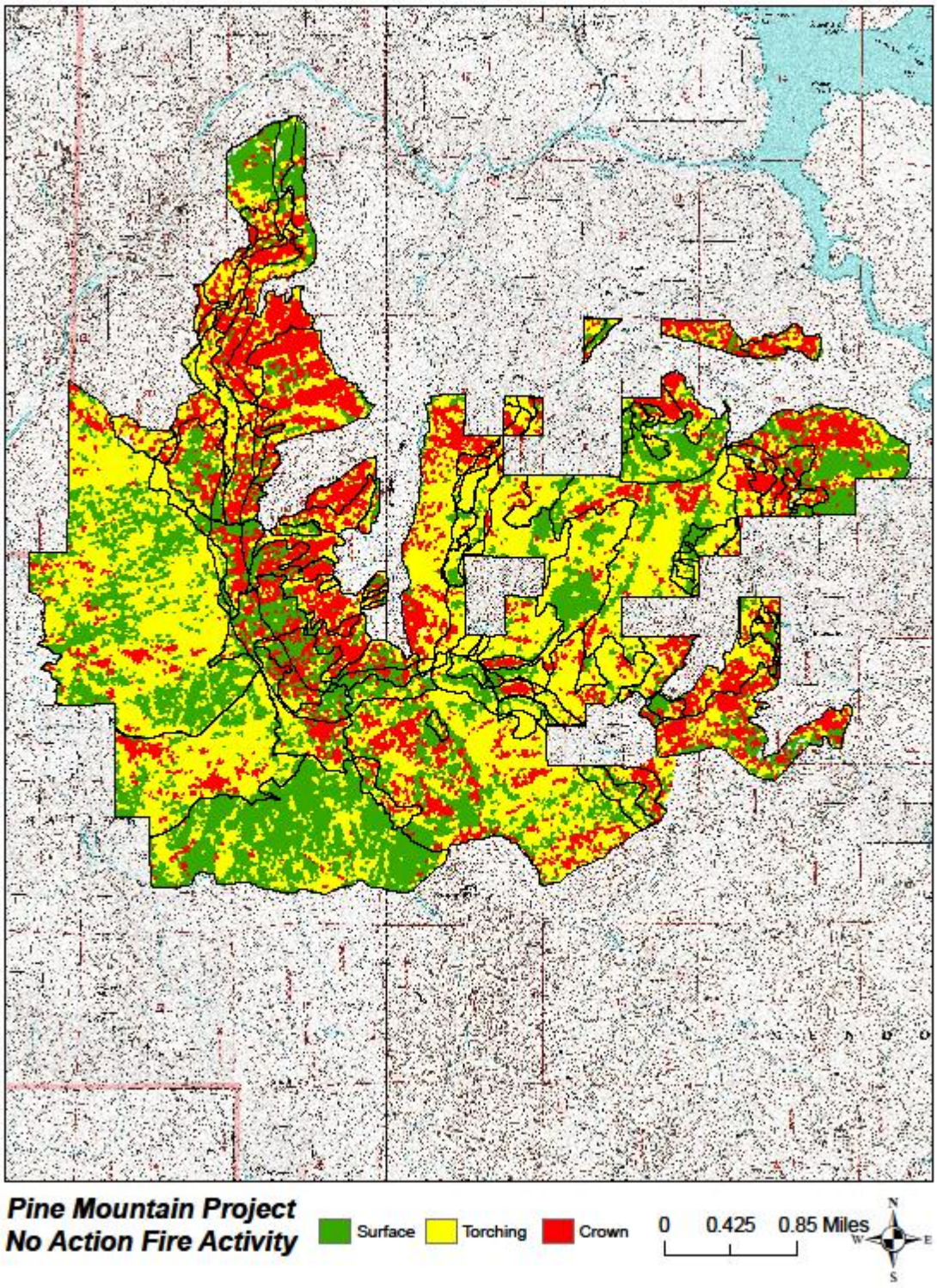

Figure 1–CFA (Crown Fire Activity) projected to occur within the Pine Mountain project areaunder existing conditions

Fire History

Based on available fire records, there have been 66 natural and human caused fires in or around the Pine Mountain project area from 1927 to 2008. Out of the 66 fires, 16 were larger than 50 acres. It is important to note that this project area is far departed from the historical fire regime, stands are in a condition to burn with higher severity effects, and many starts could have become larger fires given the past trend of larger fires on the Mendocino National Forest. Many of these larger fires have had areas of moderate to high intensities (Forks, Spanish, North Pass, and Mill fires).

Back Fire

The Back Fire occurred fairly early in the fire season in June of 2008 and resulted in effects that were less intense and had less damage to the resources than it would have had it occurred later in July or August. The Back Fire burned about 1500 acres and created a mosaic of burn effects across the burn area. Initial mortality occurred but trees have continued to die and fall creating elevated levels of larger surface fuels that increases the fire hazard within the Back Fire perimeter. The buildup of larger surface fuels can lead to a more intense fire and longer residence times which has greater impacts on surrounding vegetation and soil. Current surface fuel loading is moderate to high and prescribed understory burns would burn at moderate intensity with patches of high intensity but other areas may be able to support a low intensity burn (Fuels report).

Figure 2 - Back Fire ladder fuels in 2014, six yearspost fire, Source: Fuels Report

Figure 3 - Back Fire large woody debris fuel loading in 2014, six years post fire, Source: Fuels Report

Threatened, Endangered, & Proposed Species Analysis

Northern Spotted Owl

Species Account

There are no recent surveys for the Northern spotted owl within the Pine Mountain Late-Successional Reserve that meet the standards in the Recovery Plan (2011) survey protocol. Surveys to protocol are being conducted concurrently with the development of the Pine Mountain EIS. Since these surveys are not yet complete, the analysis in this BA/BE assumes presence of NSO in all suitable habitat.

In the late 1970's three Spotted Owl Habitat Areas (SOHAs) were established in the Pine Mountain LSR and all or portions of the SOHAs were surveyed from 1978-1990. Spotted Owl Habitat Areas are 1,000 – 3,000 acres of habitat set aside for an interacting network of northern spotted owls. One Random Sample Area (RSA) was established and surveyed from 1989-1990. Random Sample Areas are 1,000 acre circles around a random point that is visited each year to determine if an owl or pairs are present and if they are breeding (Thomas et al. 1990). Between 1993 and 1995, as various management actions were implemented, the area was surveyed to Regional Protocol from the Recovery Plan for the owl written by the US Fish and Wildlife Service. An estimated 80-100% of the suitable and potentially suitable habitat has been surveyed.

Spotted Owl Habitat Areas were replaced by Habitat Conservation Areas (HCAs) based in the Interagency Scientific Committee (ISC) Report. Habitat Conservation Areas are contiguous blocks of habitat to be managed and conserved for spotted owls and they protect larger areas of land than SOHAs previously protected.HCAs may support about 20 pairs, less than 20 pairs, or is habitat for dispersal and future nesting. The intent of the HCAs is to assure population viability, maintain distribution, enhance habitat conditions, reverse adverse situations, and hedge against catastrophic loss (Thomas et al. 1990).The Pine Mountain LSR was designated as a Category 2 HCA (block of habitat to support 2 to 19 pairs) based on The Rule Set found on page 28 of ISC Report, and was surveyed in 1992 (LSR citation).

In 1994, the area was re-designated to Late-Successional Reserve RC312 and the Final Draft Recovery Plan for NSO incorporated this area into Critical Habitat Unit 44, an area that encompasses all three portions of the LSR but not the areas in-between, the matrix land (LSR Citation). Critical Habitat Units (CHU) are areas composed of the physical and biological features essential to the conservation of the species. Under the 2012 Designation of Revised Critical Habitat for the Northern Spotted Owl there is 941, 568 acres of Critical habitat within the Inner California Coast Ranges out of a total of 9,577,969 acres in California, Oregon, and Washington.

Table 5 shows the survey results for the activity centers within the Pine Mountain LSR. This survey data shows that the LSR has met the requirement in the ISC Report of at least two pairs of owls but the area has not been recently surveyed and it is unknown if this is still the case. One pair of non-reproducing, territorial owls were found during 2016 protocol surveys and a single owl was located in an old activity center.

Table 5 - Northern spotted owl survey results for the Pine Mountain LSR from the Forest-Wide Late Successional Reserve Assessment (2000)

Activity center	Years surveyed	Survey Results
4014	NA	Nesting
	1987	Pairs
	1990, 92, & 94	Singles
	1988, 89, 91, &95	Negative
4015	NA	Nesting
	1989	Pairs
	1986, 87, 88, 90, 91, & 94	Singles
	1981, 82, 85, & 92	Negative
4017	1983, 86, 88, 90, & 92	Nesting
	1978, 81, 82, 85, 89, & 91	Pairs
	1987	Singles
	NA	Negative
4024	1992	Nesting
	1986	Pairs
	1994	Singles
	NA	Negative
4033	NA	Nesting
	NA	Pairs
	1986, 90, 92, & 94	Singles
	1981, 87, 88, 89, & 91	Negative
4039	NA	Nesting
	NA	Pairs
	1994	Singles
	1990 & 92	Negative

Activity center	Years surveyed	Survey Results
4044	NA	Nesting
	1992	Pairs
	1986 & 94	Singles
	NA	Negative
4047	NA	Nesting
	1987 & 92	Pairs
	1986, 88, & 94	Singles
	1982, 89, & 90	Negative

In 2011, NSO surveys were conducted for the South Ridge Prescribed Burn project using the 2011 US Fish & Wildlife Survey Protocol. The South Ridge prescribed burn project is located west of Lake Pillsbury along County Road 301, with roads 18N35 and 18N24 used as possible holding lines. Call points for this project are located along 18N35, M1, and 18N24. Call Points along County Road 301 and 18N24 fall within the Action Area for Pine Mountain LSR Habitat Protection and Enhancement Project. There were no northern spotted owls detected during these surveys but barred owls and western screech owls were detected.

Habitat

The Late Successional Reserve Assessment (2000) describes late successional conifer and hardwood-conifer habitat as being distributed along the northern and eastern aspects of stream corridors. The LSRA identifies 5,879 acres of the LSR that is currently providing late successional habitat scattered throughout the LSR and 9,042 acres that could potentially support late successional habitat, without stand replacement disturbances. Although the LSRA identifies almost 6,000 acres as being available as late successional habitat within the Pine Mountain LSR, in reality, that number may actually be much smaller. According to data from California Wildlife Habitat Relationship vegetation types the Pine Mountain project area contains 726 acres of late seral Montane Hardwood-Conifer, 479 acres of late seral Montane Hardwood, 1947 acres of late seral Sierran Mixed Conifer, and 2264 acres of mature seral Sierran Mixed Conifer (Silviculture report).

According to the LSRA (2000) there are 3,615 acres of foraging and 2,464 acres of nesting habitat that is scattered throughout the LSR, concentrated along stream courses, and on north and east facing slopes that is suitable for northern spotted owls. There is an additional 2,963 acres that is considered capable to provide suitable habitat in the future. At the time the LSRA was written there were eight activity centers within the Pine Mountain LSR and all eight of those are within the Action Area of Pine Mountain project. Based on the Mendocino's NSO habitat layer that takes into consideration ground truthed treatment areas there is 6,075 acres of NSO habitat within the project area, 1,837 of nesting and roosting, 2,394 acres of foraging, and 1,844 acres of dispersal.

Northern spotted owls have been observed utilizing Douglas-fir, western hemlock, grand fir, white fir, ponderosa pine, Shasta red fir, mixed evergreen, mixed conifer hardwood, and redwood forest types (USFWS 2011). The Pine Mountain project area contains Douglas-fir, ponderosa pine, and mixed conifer hardwood forest types that the owl may use as well as blue oak-foothill pine, blue oak woodland, coastal oak woodland, closed-cone pine-cypress, and montane hardwood forest types, according the California Wildlife Habitat Relationship (CWHR).

Spotted owls typically use older forest habitats that contain the structures and characteristics for nesting, roosting, and foraging. These characteristics include high canopy closure (60-90%), a multi-layered, multi-species canopy with large overstory trees (DBH > 30"), a high incidence of large trees with various deformities (large cavities, broken tops, mistletoe infections, and other evidence of decadence), large snags, large accumulations of fallen trees, and other woody debris on the ground, and sufficient open space below the canopy for owls to fly (USFWS 2011).

Foraging habitat will have similar characteristics as nesting and roosting but it may not always support a successfully nesting pairs of owls. Dispersal habitat usually consists of habitat of adequate tree size and canopy closure to provide protection from predators and minimal foraging opportunities. Small amounts of fragmented habitat does not seem to hinder spotted owl dispersal, but large fragmentation, such as the Willamette Valley, is a natural barrier to dispersing spotted owls (USFWS 2011).

Habitat that supports the transient stage of dispersing juveniles contains stands with adequate tree size and canopy cover to provide protection from avian predators and minimal foraging opportunities. This habitat may include younger and less diverse stands than foraging habitat, such as even-aged, pole-sized stands, but these stands should contain some roosting structures and foraging habitat to allow for temporary resting and feeding during this phase as this a vulnerable stage for dispersing juveniles (USFWS 2011).

Nesting and roosting habitat is patchy across the landscape and not well connected by functional habitat, either foraging or dispersal. There have been several projects on the Upper Lake Ranger District that improve habitat connectivity by reducing fuels and focusing on ecological restoration.

Prey

Main prey sources for northern spotted owls on the Mendocino are the dusky-footed woodrat and northern flying squirrel. Bushy-tailed woodrats and other small mammals can also be sources of prey for the owl (USFWS 2001).

The dusky-footed woodrat inhabits both old, structurally complex forests and younger seral stagesoften near small streams or other sources of water (Bonadio 2000, ADW 2017, USFWS 2011). Sakai and Noon (1993) found that woodrats were at their highest densities in sapling/brushy pole timber stands followed by seedling/shrubs and large old-growth stands in Northwestern California forests. Where woodrats cross ecotones is most likely where they become prey for northern spotted owl.

Woodrats have been observed near the Pine Mountain lookout and several nests were seen along the east side of Packsaddle Creek during a follow-up outing in 2016.

Carey et al. (1992) found northern flying squirrels to have higher densities in older forests than younger forests. This could be attributed to the flying squirrels use of trees and snags with cavities. Older forests often have higher canopy cover and number of downed wood that would be preferential for truffle growth, a primary food source for flying squirrels (Meyer at al 2007, USFWS 2011).

Design Features

- Retain all snags >20" DBH (unless deemed a hazard to firefighter safety)
- Existing large coarse woody debris (>15" diameter, or largest available) will be retained at 5-10 tons per acre
- A LOP for northern spotted owls will be applied from February 1 – July 9 within ¼ mile of suitable nesting habitat to minimize the potential for direct or indirect take caused by smoke or noise.
    - Once protocol surveys are completed for NSO (September 2017), this LOP will only apply to occupied nesting habitat and Activity Centers.

Alternative 1 – No Action

The northern spotted owl and its habitat would not be directly affected by the No Action alternative however indirect effects include the loss of nesting and foraging habitat. Although stands of mature coniferous forests may continue to advance in the short term as well as the creation of snags and dead and down material, they will eventually be lost to natural disturbances. Without treatment in the planning area, areas of early to mid-seral habitat are not created or maintained to become mature conifer stands to provide nesting habitat in the future. Diversity of the understory will be lost as the canopy continues to close. Without the treatment there is also the increasing risk of losing habitat to stand replacing wildfires or other natural disturbances. Average fire activity across all treatments right now is 30% surface, 50% torching, and 20% crown fire.

Alternative 2 – Proposed Action

Direct effects on Nesting/Roosting Habitat

Treatment Prescription 1, 2, 4, 5, & 6

Treatment prescription 1, 2, 4, 5, & 6 will not have any direct effects on northern spotted owl nesting and roosting habitat.

Treatment Prescription 3 –Ecological Fuel Reduction Treatment - Commercial Thinning

Treatment prescription 3 treats about 60 acres of northern spotted owl nesting and roosting habitat. The treatment units are along ridgetops and upper slopes.

This treatment is designed to promote and sustain late successional habitat by focusing tree retention on trees that provide habitat with structural diversity preferred by late successional species. This will be accomplished by thinning from below (subdominant trees) with a variable retention objective. This will reduce density by increasing space between the leave trees the make up the lower canopy and the upper canopy. Now ladder fuels are reduced, the stand height to crown base is raised, and crowns of the upperstory and understory are separated which all reduce the risk of torching and crown fire. There may be minor removal of codominant trees that help provide the canopy structure characteristic for suitable NSO and late successional habitat. Variable density thinning is used to create, sustain, or restore spatial, structural, and compositional heterogeneity in a stand. This thinning is a modification of thin below which usually results in a uniform stand structure.

After treatment all units will maintain their designation of northern spotted owl habitat. There will be no downgrading or removal of nesting and roosting habitat. The private land guidelines developed by US Fish and Wildlife Service (Appendix X) were used to ensure the treatments maintained northern spotted owl habitat. Nesting and roosting units will have a basal area maintained at 160 ft^2 or greater, a QMD at 15" or greater, trees per acre >26" DBH will be maintained at 14 or greater, and canopy cover will not be reduced below 60% post-harvest.

It is natural for stands to fluctuate in BA, QMD, TPA, and canopy cover therefore falling in and out of high quality habitat, but maintaining nesting and roosting characteristics. It was identified in the Upper Eel River Watershed Analysis that fires that in the past had led to large-scale disturbances in this watershed have contributed to the fragmentation and loss of forested habitat to an extent that would have effected northern spotted owls. Therefore, it is important to treat this habitat to prepare it for naturally ignited or human caused wildfires so that the fire is beneficial to the habitat and not detrimental and stand replacing which could potentially downgrade or remove the nesting and roosting habitat.

Treatment Prescription 7 – Riparian Reserve Management

Treatment Prescription 7 applies the Minimal Management RX 4 from the Mendocino LRMP to treatments within riparian reserves and streamside management zones. There are a couple guidelines that directly impact northern spotted owl nesting and roosting habitat:

Within the SMZ, only trees <10" DBH would be thinning from below on 15-25 foot spacing, with leave tree spacing dependent upon tree size and crown diameter

Retain canopy cover consistent with the unit prescription with a minimum of 50% in intermittent and ephemeral SMZs and 70% in perennial SMZs

These guidelines maintain nesting and roosting habitat for Treatment Prescription 3.

Indirect Effects on Nesting and Roosting Habitat

The proposed action, Alternative 2, will reduce fire risk and improve forest health. Under this alternative the potential for crown fire and torching decreases (Table6). These changes in fire behavior will

indirectly benefit northern spotted owl nesting and roosting habitat by moving it closer to historical fire return intervals and returning resiliency to the landscape.

Table 6 - Average CFA across the Pine Mountain project area

Alternative 1 – No Action			Alternative 2 – Proposed Action		
Surface	**Crown**	**Torch**	**Surface**	**Crown**	**Torch**
30%	50%	20%	83%	11%	6%

Treatment Prescription 1 – Ecological Fuel Reduction Treatment - Plantation Areas

Treatment prescription 1 reduces tree density and competition to stimulate early successional plantations and promote successional stage development. Plantations do not currently function as nesting and roosting habitat for northern spotted owls since most of the trees are of smaller diameter and stands are homogenous. By focusing retention on the trees within the upper end of the diameter range development of the stands into mid and late successional habitat is expedited. Treatments also improve stand vigor and resistance to insects and disease, drought, and wildfire. Treatments also reduce the chance of a fire entering the crown and decrease flame lengths (Table X) by removing smaller trees and increasing canopy base height.

Although this treatment does change the successional stage immediately post treatment it is expected to protect the habitat from uncharacteristic wildfire so that the stand is able to grow into those later successional stages.

Table 7 - CFA and flame lengths comparing No Action and post Proposed Action within plantation areas

	Crown Fire Activity			Flame Lengths			
	Surface	**Torching**	**Crown**	**0-4**	**4-8**	**8-11**	**11+**
Alternative 1 – No Action	35%	43%	22%	22%	5%	1%	72%
Alternative 2 – Proposed Action	76%	12%	12%	70%	6%	1%	23%

Treatment Prescription 2 – Ecological Fuel Reduction Treatment - Naturally Forested Areas

Like Treatment prescription 1, treatment prescription 2 treats trees <10” DBH with the exception of removing trees up to 20” DBH around individual conifers and hardwoods. This treatment reduces the chance of wildfire scorching or burning the canopy of a stand. Treatments raise the average canopy base height and reduce density. This indirectly affects nesting and roosting habitat by preparing it to carry beneficial wildfire and allowing the trees to grow into late successional habitat at an expedited rate than if left to its own devices. After treatment the stands chances of a surface fire increase while crown fire is reduced (Table X).

Table 8 - CFA and flame lengths comparing No Action and post Proposed Action within naturally forested areas

	Crown Fire Activity			Flame Lengths			
	Surface	**Torching**	**Crown**	**0-4**	**4-8**	**8-11**	**11+**
Alternative 1 – No Action	27%	43%	30%	21%	3%	1%	75%
Alternative 2 – Proposed Action	84%	8%	7%	83%	4%	0%	12%

Treatment Prescription 3 –Ecological Fuel Reduction Treatment - Commercial Thinning

Treatment prescription 3 indirectly effects nesting and roosting habitat by preparing the landscape for and protecting it from uncharacteristic wildfire (Table X). By removing larger trees commercially it would reduce the amount of canopy fuels therefore reducing the chance of a fire being carried through the crowns and causing mortality of the larger trees. Treatment will also raise the average canopy base height reducing the chances of a fire even entering the crowns of the trees in the first place. As seen in Table X, a majority of flame lengths are less than 4 feet which leads to the increase in surface fire and the decrease in crown fires.

Table 9 - CFA and Flame lengths comparing No Action and post Proposed Action within the commercial units

	Crown Fire Activity			Flame Lengths			
	Surface	**Torching**	**Crown**	**0-4**	**4-8**	**8-11**	**11+**
Alternative 1 – No Action	18%	49%	33%	22%	1%	0%	76%
Alternative 2 – Proposed Action	92%	4%	5%	92%	1%	0%	7%

Treatment Prescription 4 – Ecological Fuel Reduction Treatment - Shaded Fuel Break

The shaded fuel break indirectly effects northern spotted owl nesting and roosting habitat by providing a break in fuel continuity which can protect surrounding habitat. It would not remove trees >10" DBH and would only be 500 feet in width where it does not overlap with other treatments (145 acres mostly in chaparral). This fuel break would protect habitat in the Pine Mountain LSR from fire and aid in prescribed fire control and application. Post treatment CFA and flame lengths would be the same as treatments in naturally forested areas (Table 8).

Treatment Prescription 5 – Ecological Fuel Reduction Treatment - Chaparral Management

Chaparral management indirectly effects northern spotted owl nesting and roosting habitat by reducing fuel continuity and protecting surrounding habitat from uncharacteristic wildfire.

Treatment Prescription 6 – Ecological Fuel Reduction Treatment - Back Fire Fuel Reduction

There are 504 acres of nesting and roosting habitat within the Back Fire perimeter (1500 acres). The Back Fire burned at low to moderate severities (Figure X) and created a mosaic of burn effects. After initial mortality trees have continued to die and fall within the fire perimeter. This has created elevated levels of larger fuel on the ground that could lead to higher fire intensities and residence times (burning in one place for a longer period of time) which could have greater impacts on surrounding vegetation and soil. Current surface fuel loading is moderate to high but as more time goes by more trees fall and add to that fuel load. This treatment will reduce surface fuel loading, reduce tree density, and maintain a fire return interval which will protect the habitat within and surrounding the Back Fire area.

Treatment Prescription 7 – Riparian reserve Management

Treatment Prescription 7 applies the Minimal Management RX 4 from the Mendocino LRMP to treatments within riparian reserves and streamside management zones. There are a couple guidelines that indirectly impact northern spotted owl nesting and roosting habitat:

- Within the SMZ, only trees <10" DBH would be thinning from below on 15-25 foot spacing, with leave tree spacing dependent upon tree size and crown diameter
- Retain canopy cover consistent with the unit prescription with a minimum of 50% in intermittent and ephemeral SMZs and 70% in perennial SMZs

These guidelines maintain nesting and roosting habitat for Treatment Prescription 3.

Indirect Effects - Prey Species

Thinning could be detrimental to dusky-footed woodrats if there is a reduction in hardwoods, shrubs, or downed wood (USFWS 2011). The purpose of the Pine Mountain project is to enhance hardwoods and there is a design feature to retain downed woody debris which should mitigate any detrimental effects to woodrats. Chaparral units, where woodrats may be most abundant, will receive strategic fuels reduction to break up the continuity but should also stimulate regeneration of chaparral and contribute to the diversity of seral stages. Burning would be applied so that not all of the chaparral may see fire. This will create refuge for woodrats that may become displaced due to activity in the area. Lee and Tietje (2005) found that a low to moderate intensity prescribed understory burn had no negative effects on the survival or emigration of woodrats (this was after only one understory burn in the fall of 1997). They did a observe a one year decrease in spring reproductive success on burned study plots, likely due to nests consumed in the fire. An understory fire in oak woodlands is unlikely to alter woodrat populations if suitable habitat is maintained as refuge.

Canopy cover, downed wood, and truffle availability are important features for northern flying squirrels. In commercial units, canopy cover may be reduced but since no dominant or co-dominant trees will be removed there will not be a drastic increase in the amount of light reaching the forest floor. This will help maintain a microclimate for truffle growth. Prescribed fire may reduce the amount of fine fuels that aid in truffle development as organic material but post-fire changes are expected to change rapidly as litter continues to accumulate (Meyer et al. 2007). Holloway and Smith (2010) found that forestry practices that changed the structure or age of residual stands significantly decreased the abundance of

northern flying squirrels. They also noted a decrease in abundance in partially harvested stands compared to the stands that received no harvest. The Pine Mountain project does not alter the age or structure of residual stands. The project maintains canopy cover levels suitable for the designated northern spotted owl habitat type (nesting, foraging, and dispersal) and aims to promote and sustain late successional characteristics within the treated stands.

During pile burning, at least one pile per acre will be left unburned and may provide refuge for small mammals that may also be prey for the northern spotted owl.

Direct Effects on Foraging Habitat

Treatment Prescription 1 – Ecological Fuel Reduction Treatment - Plantation Areas

Treatment prescription 1 will not have any direct effects on northern spotted owl foraging habitat. Plantations do not function as foraging habitat due to the smaller size of the trees and the lack of trees greater than 26" DBH and the uniformity of the stands.

Treatment Prescription 2 – Ecological Fuel Reduction Treatment - Naturally Forested Areas

Treatment prescription 2 will have a direct on foraging habitat by increasing QMD by removing the smaller trees from the stand (Table X) moving several stands from low quality foraging into a higher quality of habitat. Although this treatment may remove trees 10-20" DBH around individual conifers and hardwoods, all of the stands that receive this treatment maintain foraging habitat and some reach nesting and roosting post-fire treatments. Canopy cover will not be reduced below 40% since all trees removed will be subdominant and not likely contributing to the overstory.

Treatment Prescription 3 – Ecological Fuel Reduction Treatment - Commercial Thinning

Treatment prescription 3 treats about 1560 acres of foraging habitat (Figure 3). These treatments are along ridgetops and upper slopes and were once nesting stands but due to the density and suppression within the stands they have downgraded to foraging.

This treatment is designed to promote and sustain late successional habitat by focusing retention on trees that provide habitat with structural diversity preferred by late successional species. This will be accomplished by thinning from below (subdominant trees) with a variable retention objective. This will reduce density by increasing space between the leave trees that make up the lower canopy and the upper canopy. Now ladder fuels are reduced, the stand height to crown base is raised, and crowns of the upperstory and understory are separated which all reduce the risk of torching and crown fire. There may be minor removal of codominant trees that help provide the canopy structure characteristic for suitable NSO and late successional habitat. Variable density thinning is used to create, sustain, or restore spatial, structural, and compositional heterogeneity in a stand. This thinning is a modification of thin below which usually results in a uniform stand structure.

After treatment all units will maintain their designation of northern spotted owl foraging habitat or develop into nesting and roosting habitat. In the guidelines developed for private timberlands by US Fish

and Wildlife Service foraging habitat must maintain all of the following characteristics post-harvest in order to avoid take:

1. Basal areas ranging from 120-180+ square feet, **and**
2. ≥13" QMD, **and**
3. ≥5 TPA of trees ≥26" DBH, **and**
4. ≥40%-100% canopy closure.

There will be no downgrading or removal of habitat. There are five units that will meet nesting and roosting habitat requirements post-harvest (Table 10). The primary characteristic that is increased is QMD which moves these stands into nesting and roosting habitat. There are three units that end up meeting nesting and roosting requirementsafter second simulated prescribed fire (Table 11). This is due to the increase in canopy cover that has developed due to the release of suppressed trees allowing them access to nutrients and space to grow. Over time other stands move in and out of nesting and roosting, and some even into high quality nesting and roosting.

Table 10 - Foraging units that post-harvest have increased QMD giving them all four characteristics that make up nesting and roosting habitat according to the private timberland guidelines

Units	Existing Condition	Post-Harvest
4	*2016*	*2018*
BA	239	171
QMD	11	18
TPA >= 26" DBH	18	18
Canopy Cover	77	62
7		
BA	342	190
QMD	6	15
TPA >= 26" DBH	27	24
Canopy Cover	91	64
23		
BA	298	166
QMD	14	20
TPA >= 26" DBH	11	11
Canopy Cover	82	61
30		
BA	266	182
QMD	10	16
TPA >= 26" DBH	13	13
Canopy Cover	79	64
33A		
BA	177	164
QMD	13	15

Units	Existing Condition	Post-Harvest
TPA >= 26" DBH	10	12
Canopy Cover	72	67

Table 11 - Foraging units that meet nesting and roosting characteristics in the private timberland guidelines after the second simulated fire

Unit	Existing Condition	Post-Harvest	Before Fire	Post Fire	Post Fire
3B	*2016*	*2018*	*2023*	*2024*	*2035*
BA	191	168	176	176	190
QMD	13	21	21	21	18
TPA >= 26" DBH	18	19	21	21	24
Canopy Cover	68	58	60	58	61
8					
BA	248	163	176	177	205
QMD	6	17	18	18	16
TPA >= 26" DBH	16	16	16	16	20
Canopy Cover	85	56	57	57	61
28[1]					
BA	281	154	167	169	198
QMD	16	20	21	21	18
TPA >= 26" DBH	16	16	16	16	20
Canopy Cover	76	54	55	56	60

Treatment prescription 3 is beneficial to foraging habitat, as long as maintenance burns occur regularly. In the case that maintenance burns cannot be completed the initial harvest and prescribed burn could prepare the landscape to carry a beneficial fire by reducing stand density and raising the crown base height. It is natural for stands to fluctuate in BA, QMD, TPA, and canopy cover therefore falling in and out of nesting and roosting, but maintaining foraging characteristics. It is important to treat this habitat to prepare it for naturally ignited or human caused wildfires so that the fire is beneficial to the habitat and not detrimental and stand replacing which could potentially downgrade or remove the habitat.

Treatment Prescription 4 – Ecological Fuel Reduction Treatment - Shaded Fuel Break

The shaded fuel break (145 acres that does not overlap with other treatments) will not have a direct effect on northern spotted owl foraging habitat.

Treatment Prescription 5 – Ecological Fuel Reduction Treatment - Chaparral Management

Treatment prescription 5 will not have a direct effect on northern spotted owl foraging habitat because chaparral does not function as foraging habitat.

[1] Although Unit 28's numbers show that it meets the private timberland guidelines for high quality nesting and roosting habitat on the ground the structure of the habitat is not suitable for a nesting pair of owls and it is designated as foraging.

Treatment Prescription 6 – Ecological Fuel Reduction Treatment - Back Fire Area

Treatments within the Back Fire will not have any direct effects on northern spotted owl foraging habitat.

Treatment Prescription 7 – Riparian Reserve Management

Treatment units within riparian reserves will follow prescriptions in treatments 1-6 but will adhere to a specific set of design features. The effects to foraging habitat will be the same as discussed under the other treatment prescriptions.

Indirect Effects on Foraging Habitat

Treatment Prescription 1 – Ecological Fuel Reduction Treatment - Plantation Areas

By treating plantations stand density is reduced and successional stage development will be promoted. Although the initial treatment will not change the current successional stage, it will expedite the process than if the stands were left to self-thin. Treatments will decrease competing brush species and remove trees to reduce competition for resources proving trees with the nutrients and space to grow into future foraging habitat.

Treatments will reduce ladder fuels and increase crown height reducing the risk of a moderate to high severity fire by removing small diameter trees and brush. This prepares the plantations to handle a wildfire with minimal impacts to the stands. See Table X for the CFA and flame length comparisons.

Treatment Prescription 2 – Ecological Fuel Reduction Treatment - Naturally Forested Areas

Treatment prescription 2 reduces density of trees less than 10" DBH in naturally forested areas and may also remove trees 10-20" DBH around individual conifers and hardwoods. This treatment indirectly effects northern spotted owl foraging habitat by releasing stressed trees and reducing ladder and surface fuels.

Treatment Prescription 3 – Ecological Fuel Reduction Treatment - Commercial Thinning

Treatment prescription 3 indirectly effects foraging habitat by preparing the landscape for and protecting it from uncharacteristic wildfire. By removing larger trees commercially it would reduce the amount of canopy fuels therefore reducing the chance of a fire being carried through the crowns and causing mortality of the larger trees. Treatment will also raise the average canopy base height reducing the chances of a fire even entering the crowns of the trees in the first place. As seen in Table 7, a majority of flame lengths are less than 4 feet which leads to the increase in surface fire and the decrease in crown fires.

Treatment Prescription 4 – Ecological Fuel Reduction Treatment - Shaded Fuel Break

The shaded fuel break, where it does not overlap with other treatments, would indirectly effect northern spotted owl foraging habitat by providing a break in fuel continuity. This would change fire behavior and provide a control point during wildfires and contribute to future prescribed burning

activities. This treatment protects habitat within the late successional reserve and surrounding areas by reducing wildfire risk (see table X for CFA and flame length comparisons).

Treatment Prescription 5 – Ecological Fuel Reduction Treatment - Chaparral Management

Treatment prescription 5 would indirectly effect foraging habitat by treating chaparral fields to break up continuity of fuel. This will protect late successional habitat within the Pine Mountain LSR and the project area from uncharacteristic wildfire.

Treatment Prescription 6 – Ecological Fuel Reduction Treatment - Back Fire Area

Treatments within the Back Fire perimeter will indirectly effect northern spotted owl foraging habitat by reducing surface fuel loading and tree density, and maintaining the fire return interval. Since the fire in 2008 larger trees have begun to fall accumulating as surface fuel on the forest floor and creating the environment for a higher intensity wildfire. Treating the Back Fire area would decrease ladder and surface fuels to return fire to the landscape.

Treatment Prescription 7 – Riparian reserve Management

Treatment units within riparian reserves will follow prescriptions in treatments 1-6 but will adhere to a specific set of design features. The effects to foraging habitat will be the same as discussed under the other treatment prescriptions.

Alternative 3 – No New Temporary Roads

Direct and indirect effects to northern spotted owl under alternative 3 would be the same as alternative 2, the proposed action.

Alternative 4 – No Commercial Thinning in Riparian Reserves

Under alternative 4 there would be no commercial thinning in riparian reserves which would exclude 29 acres of nesting and roosting habitat and 638 acres of foraging from treatment. Even though these acres would receive treatment prescription 2 by default, they would continue to accumulate fuels and density would continue to increase. Although crown fire and torching would still be reduced under this alternative torching remains at 19% of the area and surface fire is 73% while under alternative 2 surface fire increases to 92% of the project area (Table X).

Table 12 - Table comparing Alternatives 1, 2, and 4 and crown fire activity within the project area post treatment

Crown Fire Activity	Alternative 1 – No Action	Alternative 2 – Proposed Action	Alternative 4 – No Commercial in RRs
Surface	18	92	73
Torching	33	4	8
Crown	49	5	19

Alternative 5 – No Commercial Thinning in Unites 3a, 19, 24b, and 33b (Northern Spotted Owl Nesting Habitat)

Alternative 5 would eliminate commercial thinning in 60 acres of nesting and roosting habitat for the northern spotted owl. These acres would then default into treatment prescription 2. Although crown fire activity post treatment would not differ drastically from the proposed action accumulation of fuels would continue to develop which could lead to a higher intensity fire. By not treating these 60 acres they maintain nesting and roosting status in the short term but in the long term density will increase which can decrease QMD and lower the BA. These two characteristics are important to maintain the late seral features of northern spotted owl nesting and roosting habitat.

Table 13 - Flame length comparison of alternatives 1, 2, and 5

	Fireline Intensity Hazard Rating	Percent of Area No Action	Percent of Area Alternative 2	Percent of Area Alternative 5	Percent Increase or Decrease (-)	
					Compare to No Action	Compare to Alt 2
less than 4	Low	22	92	91	69	-1
4-8	Moderate	1	1	1	0	0
8-11	High	1	0	0	1	0
11+	Very High	77	7	8	69	1

Table 14 - CFA comparisons of alternatives 1, 2, and 5

Potential Crown Fire Class	Percent of Area No Action	Percent of Area Alternative 2	Percent of Area Alternative 5	Percent Increase or Decrease (-)	
				Compare to No Action	Compare to Alt 2
Surface Fire	18	92	89	71	-3
Crown Fire	49	4	6	-43	2
Torching	33	5	5	-28	0

Northern Spotted Owl Designated Critical Habitat

Critical habitat is defined by USFWS as geological areas essential to the conservation of the species. Within the designated critical habitat for a species there are Primary Constituent Elements (PCEs) defined for the critical habitat. These PCEs are physical and biological features essential to the conservation of the species, for which special management may be required (77 Fed. Re. 71877, 71897). The Pine Mountain LSR has designated critical habitat for the northern spotted and the PCEs are defined as forest types that support the northern spotted owl itself (PCE 1), nesting and roosting habitat (PCE 2), foraging habitat (PCE 3), and dispersal habitat (PCE 4).

Norther spotted owl PCEs are described in the Federal Register as the following:

…PCE 1 must occur in concert with PCE 2, 3 or 4;

(1) Forest types that may be in early-, mid-, or late-seral stages, these forest types are primarily:
    - Sitka spruce
    - Western hemlock
    - Mixed conifer and mixed evergreen
    - Grand fir
    - Pacific silver fir
    - Douglas-fir
    - White fir
    - Shasta red fir
    - Redwood/Douglas-fir, and
    - The moist end of the ponderosa pine coniferous forests zones at elevations up to approximately 3,000 ft near the northern edge of the range and up to approximately 6,000 ft at the southern edge

(2) Habitat that provides for nesting and roosting and in many cases the same habitat also provides for foraging. Nesting and roosting habitat provides structural features for protection from adverse weather conditions and predation risk on adults and young. These habitats must provide:
    - Sufficient foraging habitat to meet the home range needs of territorial pairs
    - Stands for nesting and roosting that are generally characterized by:
        - Moderate to high canopy cover (60 to over 80%)
        - Multilayered, multispecies canopies with large (20-30 in or greater DBH) overstory trees
        - High basal area (greater than 240 ft^2/ac)
        - High diversity of different diameters of trees
        - High incidence of large live trees with various deformities (e.g. large cavities, broken tops, mistletoe infections, and other evidence of decadence)
        - Large snags and large accumulations of fallen trees and other woody debris on the ground; and
        - Sufficient open space below the canopy for northern spotted owls to fly

(3) Habitat that provides for foraging…
    - Klamath and Northern California interior Coast Ranges
        - Stands of nesting and roosting habitat; in addition, other forest types with mature and old-forest characteristics;
        - Presence of the conifer species, incense cedar, sugar pine, Douglas fir, and hardwood species, such as big-leaf maple, black oak, live oaks, and madrone, as well as shrubs;

- Forest zone patches within riparian zones of low-order streams and edges between conifer and hardwood forest stands;
- Brushy openings and dense young stands or low-density forest patches within a mosaic of mature and older forest habitat
- High canopy cover (87% at frequently used sites);
- Multiple canopy layers
- Mean stand diameter greater than 21 in
- Increasing mean stand diameter and densities of trees greater than 26 in increases foraging habitat quality;
- Large accumulations of fallen trees and other woody debris on the ground; and
- Sufficient open space below the canopy for northern spotted owl to fly

(4) Habitat to support the transience and colonization phases of dispersal, which would optimally be composed of nesting, roosting, or foraging…

- Habitat supporting the transience phase of dispersal, which includes:
  - Stands with adequate tree size and canopy cover to provide protection from avian predators and minimal foraging opportunities; in general this may include, but is not limited to, trees with at least 11 in DBH and a minimum 40% canopy cover

Younger and less diverse forest stands than foraging habitat, such as even-aged, pole-sized stands, if such stands contain some roosting structures and foraging habitat to allow for temporary resting and feeding during the transience phase.

Existing Conditions

Within the Action Area (29,936 acres) there is 12,123 acres of critical habitat and there is 8,284 acres of critical habitat in the project area. There are 6,857 acres of critical habitat that will receive at least one type of treatment. Of those 6,857 acres, 915 acres will receive fuel break treatment, 5264 acres will receive some sort of fuels treatment, and 1516 acres will receive a treatment type of greater than 10" thinning. The fuel break overlaps with fuels and thinning treatments making the acres treated seem larger than what is on the ground.

Table 15 - Acres of designated critical habitat receiving treatment in the Pine Mountain Late Successional Reserve Habitat Enhancement and Protection project and the percentage of those acres in relation to Critical Habitat

Treatment	Acres	% ICC Unit	% ICC5	% AA	% PA
Interior California Coast	1,000,650				
ICC5 Subunit	34930				
Action Area	29940	3%	86%		
Project area	10210	1%	29%	34%	
Treatment Prescription 1 -	364	0.04%	1%	1%	4%

Plantations					
Treatment Prescription 2 – Naturally Forested Areas	3523	0.4%	10%	12%	35%
Treatment Prescription 3 – Commercial Units	1702	0.2%	5%	6%	17%
Treatment Prescription 4 - Shaded Fuel Break (acres with no treatment overlap)	145	0.014%	0.4%	0.5%	1%
Treatment Prescription 5 – Chaparral	1822	0.2%			
Treatment Prescription 6 – Back Fire	444				
No treatment (in PA)	1427		4%	12%	14%

Effects on Primary Constituent Elements

Treatment Prescription 1: Thinning ≤10 Inches DBH in Plantation Areas

Treatment prescription 1 is a thinning treatment in previously established plantations that may be applied through prescribed fire only or as a combination of prescribed burning, hand or mechanical thinning, hand or mechanical piling, and/or chipping. Treatments may be followed by thinning and prescribed fire to continue to reduce or maintain fuels in a desired condition. There are 292 acres of Treatment Prescription 1 within designated critical habitat for the northern spotted owl.

Plantations are characterized by even-aged and even-sized stands that are primarily ponderosa pine trees less than 10" DBH although some trees may be 12-14" DBH. All trees removed with this prescription will be 10 inches or less and spaced 15-30 feet apart. The largest and most vigorous trees are to be retained with desired leaving trees being hardwoods, sugar pine, Douglas-fir, and ponderosa pine. Prescribed fire will add to the mortality of smaller diameter trees while increasing canopy base height, thus reducing ladder fuels.

PCE 1

This treatment prescription will not modify the forest types (PCE1).

PCE 2

It is unlikely that these plantation stands provide any suitable nesting or roosting habitat (PCE 2). Plantations lack multilayered, multispecies canopies with overstory trees 20-30" DBH or greater as well as large live trees with various deformities, large snags or coarse woody debris. Any trees removed mechanically will be less than 10" DBH. Prescribed fire may kill trees greater than 10" DBH but mortality is expected to be less than 10% in trees greater than 16" DBH (Fuels report). Prescribed fire is likely to consume existing snags and logs but it is also expected to create these features via mortality in the overstory. Coarse woody debris retention is required in the design features as well. Treating these

stands will help move plantations toward supporting PCE 2 in the future.This treatment prescription will not remove any nesting or roosting habitat (PCE2).

PCE 3

It is unlikely that plantations provide suitable foraging habitat for northern spotted owls (PCE 3). Plantations lack the multiple canopy layers and mean stand diameter of 21" and they also do not provide PCE 2 as mentioned in the previous paragraph. Any trees removed mechanically will be less than 10" DBH. Prescribed fire may kill trees greater than 10" DBH but mortality is expected to be less than 10% in trees greater than 16" DBH (Fuels report). Prescribed fire is likely to consume existing snags and logs but it is also expected to create these features via mortality in the overstory. Coarse woody debris retention is required in the design features as well. Treating these stands will help move plantations toward supporting PCE 3 in the future.This treatment prescription will not remove any foraging habitat (PCE3).

PCE 4

Plantations likely provide dispersal habitat (PCE 4) for northern spotted owls. These younger and less diverse stands are able to provide temporary resting and feeding sites during the owl's transient phase. Thinning, either by mechanical or prescribed fire, would allow the plantations to maintain PCE 4 while creating conditions that allow them to develop features of PCEs 2 & 3, nesting/roosting and foraging, respectively. This treatment prescription modifies PCE 4 but maintains the function of dispersal habitat.

Treatment Prescription 2: Thinning ≤10 Inches DBH in Naturally Forested Areas

Treatment prescription 2 is a thinning treatment in naturally forested areas that express early, mid, or late successional structure that may be applied as prescribed fire only or in combination with hand or mechanical thinning, hand or mechanical piling, chipping, and/or pile burning. Treatments may be followed by thinning and prescribed to continue to reduce or maintain fuels in a desired condition. There are XX acres of Treatment Prescription 2 within critical habitat for the northern spotted owl.

As with treatment prescription 1, this treatment is restricted to trees less than or equal to 10" DBH. Residual spacing will range from 15-30 feet but may vary by 25% to allow for a variability of density and selection of the best leave trees. Leave trees are generally the largest and most vigorous trees. Desired leave tree priority is as follows: hardwoods, sugar pine, ponderosa pine, and Douglas-fir. Prescribed fire may kill trees greater than 10" DBH but mortality is expected to be less than 10% in trees greater than 16" DBH (Fuels report). Prescribed fire is likely to consume existing snags and logs but it is also expected to create these features via mortality in the overstory. Coarse woody debris retention is required in the design features as well.

PCE 1

This treatment prescription will not modify the forest type (PCE1).

PCE 2

Removing trees less than 10" DBH is not intended to reduce canopy cover below 60% in suitable nesting and roosting habitat but will raise the average canopy base height which reduces the chance of fires moving from the ground into the crown which could essentially reduce canopy cover to zero. This

treatment will also help maintain the multilayered, multispecies canopy with larger overstory trees while maintaining, or aiming to create, a high basal area. Large snags and coarse woody debris may be lost to prescribed fire, but are also created fire, and there are snag and coarse woody debris retention design features to ensure that this element of habitat remains on the landscape. Removing smaller diameter trees will also open up the understory providing owls with sufficient space to fly. Treatment prescription 2 will not remove nesting and roosting habitat (PCE 2).

PCE 3

Treatment prescription 2 will maintain PCE 2 and contribute to the maintenance other PCE 3 characteristics. Along with stands of nesting and roosting habitat, PCE 3 requires brushy openings or low-density forest patches within a mosaic of the mature and older habitat. These brushy openings will be created or maintained when trees are thinned mechanically and/or with fire allowing sunlight to reach the ground, stimulating shrub growth. Some dense, young stands not killed by prescribed fire can function as "brushy openings" as well. Treatment prescription 2 will not remove foraging habitat (PCE 2).

PCE 4

Treatment prescription 2 will maintain PCEs 2 & 3 which contribute to PCE 4, dispersal habitat. This treatment focuses on removing smaller diameter trees and retaining the best large trees. Although this treatment may alter younger, dense stands that may be used as dispersing habitat it will not remove PCE 4 from functioning on the landscape.

Treatment Prescription 3: Thinning >10" DBH & Post-thinning Prescribed Fire

Treatment prescription 3 will apply ecological thinning to stands of mid or late successional habitat that are located on or near ridgetops or upper slopes. The intent of this treatment is to promote or maintain late successional habitat by working with the stand's current heterogeneity. Ecological thinning treatments are designed to enhance biodiversity by focusing on retaining trees that provide structural diversity found in late successional forests. Ecological thinning addresses appropriate tree density reduction to open the lower story canopy to enhance NSO habitat, reduce competition, and develop resiliency.

There are 1516 acres of critical habitat that is proposed to receive treatment prescription 3. This is only 4% of the critical habitat subunit ICC5.

PCE 1

This treatment prescription will not modify the forest type (PCE1).

PCE 2

Treatment prescription 3 is designed to enhance late successional habitat. After initial thinning canopy cover will be maintained at a minimum of 60%. A multilayered, multispecies canopy will be achieved through thinning from below with a variable retention objective. This thinning process removes subdominant trees to reduce density and increase spatial separation between trees in the lower and upper canopies. No dominant or predominant trees are removed in this thinning process. Basal area may be reduced to a minimum of 160 ft^2/ac after initial treatment but increases post-harvest. This basal

area is well below the critical habitat characteristic for high basal area greater than 240 ft^2/ac. Forest Vegetation Simulator estimates a stand of nesting/roosting habitat that's BA is reduced to 160 ft^2/ac reaching 240 ft^2/ac BA about 2054. Variable density thinning also allows for selecting a diversity of a diameter trees and modifies the typical thin from below so a stand is not uniform following treatment. Variability in tree diameters is an important characteristic for nesting and roosting habitat. The focus of this treatment is to retain the largest trees that express the late seral elements like deformities (i.e. large cavities, broken tops, mistletoe infection, and other evidence of decadence) that are important for NSO nesting and roosting structures. The types of tress that are the focus of this retention are:

- All pre-dominant conifer trees (diameters >39" DBH)
- All dominant conifer trees as required by the LSRA (diameters 30-39" DBH)
- Codominant and intermediate conifer trees with growing space in the canopy for crown development (diameters <30" DBH)
- Healthy dominant or codominant hardwood trees

Large snags and coarse woody debris may be consumed during prescribed fire, but are likely to be replaced by the same fire that consumed them. There are snag and coarse woody debris retention design features to ensure that this element of habitat remains on the landscape. Variable density thinning will also open up the understory to create growing space which in turn creates flying space for northern spotted owls.

Although this treatment reduces basal area, this treatment only affects 4% of subunit ICC5 of northern spotted owl Critical Habitat. This treatment modifies PCE 2 but does not remove it from functioning on the landscape.

PCE 3

Treatment prescription 3 alters PCE 2 but allows it to maintain its function and contribute to PCE 3. This treatment allows focuses on retaining conifer and hardwood species that are important components of foraging habitat. Through variable density thinning and prescribed fire, brushy openings and dense, young stands or low density forest patches will be created on the landscape as well as open space below the canopy for flight. Canopy cover will be maintained at a minimum of 40%. Multiple canopy layers will be created through variable density thinning by treating for variation in the stand, not uniformity. Mean stand diameter is also increased after the implementation of this treatment prescription. Snags and large woody debris is expected to be consumed during prescribed fire, but will also be created by prescribed fire. Depending on the season in which the fire is applied to the landscape, higher fuel moistures reduce the amount of larger woody debris consumed by the fire.

Although this treatment modifies PCE 2, the amount of habitat altered is a small percentage of the subunit as a whole and is not enough to affect the function of PCE 3 in this treatment prescription.

PCE 4

Foraging habitat, PCE 4, will be maintained throughout this treatment prescription with trees of adequate size and canopy cover to provide protection from weather and predators while dispersing. Although trees greater than 11" DBH will be removed, this treatment aims to retain the largest trees

that express late seral characteristics. Adequate canopy cover can be found in the patches of PCEs 2 & 3 within PCE 4. Heterogeneity is a desired condition in this treatment and those younger stands are important for temporary roosting and feeding sites during the dispersal stage for northern spotted owls.

Treatment prescription 3 may remove some components of PCE 4 such as characteristics of PCE 2, it will also maintain larger trees and canopy cover while desiring a heterogenic structure. Therefore this treatment prescription maintains foraging habitat (PCE 4).

Treatment Prescription 4: Shaded Fuel Break

Shaded fuel breaks treat surface, ladder fuels, and tree canopy bulk density to break up fuel continuity and change fire behavior to reduce fire hazard in strategic locations on the landscape. This fuel break is located along 17N23 and M1. There are 915 acres of this treatment within critical habitat for northern spotted owl. This treatment does overlap with other treatments and where this is the case the appropriate unit-specific treatment would be applied (<10" DBH in naturally forested areas or plantations or >10" DBH in commercial areas). Prescribed fire may also be applied. Where the fuel break does not overlap with other treatments trees less than or equal to 10" DBH would be removed and spacing would be 15-30 feet, but may vary by 25%. Where chaparral dominates, brush patches of up to 10-15 feet in diameter will be retained at a 30-50 foot spacing.

PCE 1

This treatment prescription will not modify the forest type (PCE1).

PCE 2

Where this treatment does not overlap with other treatment types (145 acres), there are 78 acres within critical habitat for the northern spotted owl (<0.1% of subunit ICC5). Fuel breaks thin trees less than 10" DBH generally leaving the canopy intact with multilayered, multispecies and higher cover percentages. Where canopy cover is >60% in fuel break units it will likely remain that way and larger trees will be retained. Snags and coarse woody debris are not desirable within fuel breaks to keep fuel loadings lower. The likelihood of an owl using habitat within 150 feet of roads is low (citation). This treatment prescription may modify but will not remove PCE 2 (nesting and roosting habitat).

PCE 3

Treatment prescription 4 maintains PCE 2 allowing it to function as a part of PCE 3. The thinning of trees < 10" DBH will maintain canopy cover and multiple canopy layers. Larger trees that are generally resilient to fire will remain on the landscape and contribute to mean stand diameter, which increases as smaller trees are removed. As previously mentioned, woody debris is not a feature desired in fuel breaks, therefore treatment prescription 5 may modify but will maintain foraging habitat (PCE 3).

PCE 4

Treatment prescriptions 4 maintain PCEs 2 & 3 contributing to PCE 4, dispersal habitat. Retained trees will be >10" DBH and thinning from below will maintain a canopy cover of at least 40%. Treatment prescription 4 will modify but maintain foraging habitat (PCE 4).

Treatment Prescription 5: Chaparral Management

Treatment prescription5 uses prescribed fire as a tool for strategic fuels reduction that breaks up the continuity of fuel in large chaparral fields without resulting in changes in vegetation type. Chaparral habitats on the edge of forested habitat may be used by hunting owls, but not for extended periods of time. This treatment prescription will not modify any PCEs of northern spotted owl Critical Habitat.

Treatment Prescription 6: Back Fire Fuel Reduction

Treatment prescription 6 uses prescribed fire to reduce surface fuel loading and tree density and to maintain the fire return interval within the Back Fire footprint of 2008. Thinning trees <10" DBH may need to be done to facilitate burning as well as brushing roads, line construction, and brush removal. Where there are areas of heavy fuel loading, piling and pile burning or jackpot burning may be utilized. The Back Fire burned prior to the 2012 Critical Habitat rule but covers 1253 acres of the 2012 designated critical habitat. The Back Fire burned at low to moderate severity which probably resulted from ignition early in the fire season but if the fire had started later in the season results would have been drastically different (Fuels report).

PCE 1

This treatment prescription will not modify the forest type (PCE1).

PCE 2

Within the Back Fire perimeter there are stands capable of supporting high quality nesting and roosting habitat. By maintaining a fire return interval fuel loading remains low and habitat will continue to develop. Prescribed fire will reduce the small diameter surface fuel and brushy understory. Where canopy cover is a least 60% prescribed fire is not likely reduce it. Mortality in the overstory (trees >16" DBH) is less than 10% during prescribed fires (Fuels report). A multilayered, multispecies canopy will be retained where it exists, as well as any other attributes of PCE 2. The only attribute that may be reduced is snags and coarse woody debris but these features are also created via prescribed fire. Treatment prescription 6 may modify nesting and roosting habitat (PCE 2).

PCE 3

Treatment prescription 6 maintains PCE 2 to contribute to PCE 3. Where canopy cover and multiple canopy layers exist they will be maintained with prescribed fire. Brushy openings and dense, young stands may be consumed as well as coarse woody debris and snags. Prescribed fire also creates woody debris and snags and open spaces for owl to fly and forage. This treatment prescription may modify foraging habitat (PCE 3).

PCE 4

This treatment maintains PCEs 2 & 3 contributing to PCE 4. Retained trees will be >10" DBH and where it exists a canopy cover of at least 40% will remain. Treatment prescription 7 will modify but maintain foraging habitat (PCE 4).

Treatment Prescription 7: Riparian Reserve Management

Treatment prescription 7 are treatments within identified protection buffers that would reduce stand density, enhance stand health, and decrease fuels while being consistent with the ACS objectives. This

treatment is applied in Treatment Prescriptions X, X, & X and meet the Minimum Management XXX. These treatments are less intensive in the protection buffers than the treatments they occur within and require further analysis.

Prescribed Fire

Prescribed fire to the landscape within all treatment prescriptions as a tool for long-term maintenance of fuels and overall ecosystem health. Effects to Critical Habitat PCEs from prescribed fire is touched upon under each treatment, but is discussed more in this section. This treatment will be applied to multiple areas covering all vegetation types and multiple entries may be required to reach desired conditions. Desired conditions may be achieved by pile burning, understory burning, or jackpot burning. Prescribed fire may be applied as pre-thinning, post-thinning, or as prescribed fire only. If applied as prescribed fire only, site preparation may be required to facilitate burning. Site preparation usually includes thinning of trees less than 10" DBH, brushing of roads, snag removal for safety, and/or line construction.

PCE 1

This treatment prescription will not modify the forest type (PCE1).

PCE 2

Prescribed fire, when applied during optimum conditions, is not intended to remove characteristics of PCE 2. Canopy cover and a multilayered, multispecies canopy will be maintained. Prescribed fire is expected to kill small diameter trees and brush and the amount of mortality depends on the conditions of fuel when the fire is applied to the landscape. Prescribed fire may also kill larger trees but mortality is expected to be less than 10% in trees over 16" DBH (Fuels report). By applying prescribed fire at different times during the year it allows for a variation in fire intensity and retention of large woody material which are important components to PCE 2. A variation in fire intensity would contribute to a diversity of tree diameters. Large, live trees exhibiting late seral structures generally have a thicker bark and are resilient to prescribed fire. Snags and coarse woody debris may be consumed by prescribed fire but are also created by the same. Higher fuel moistures associated with spring burns may prevent the loss of larger pieces of coarse woody debris. Prescribed fire raises canopy base height, creating an open understory for owls to fly. Prescribed fire may modify but will not remove PCE 2 (nesting and roosting habitat).

PCE 3

Prescribed fire modifies PCE 2 by removing coarse woody debris, but it maintains its function as nesting and roosting habitat and contributes to PCE 3. Prescribed burning is expected to have mortality in the understory which may remove young, dense stands that could be used as foraging sites, but will create brushy openings. The amount of understory consumed is dependent on the timing of the burn. Timing of the burn is also important for retention of fallen trees and other woody debris. Higher fuel moistures in the spring limit the amount of larger woody debris that is consumed (Fuels report). Fire also is expected to create snags and logs through overstory mortality, too. Prescribed fire may modify but will maintain PCE 3 (foraging habitat).

PCE 4

Prescribed fire modifies but maintains PCEs 2 & 3 and allows them to contribute to PCE 4 (foraging habitat). As mentioned previously, prescribed fire is expected to kill understory vegetation and smaller diameter trees. Prescribed fire is applied to the land so that a diversity of seral stages is achieved and not all understory will be consumed. Larger trees (>16" DBH) may be killed in the overstory (<10% mortality) but would then contribute to snag density or coarse woody debris. Prescribed fire may modify but will maintain PCE 4 (foraging habitat).

Forest Service Species Analysis

Northern Goshawk

Species Account

At the time the LSRA (USFS 2000) was written there were three incidental sightings of northern goshawks near Benmore Creek in 1981, 1989, and 1994. These sightings overlap with NSO territories 4015 and 4047. Parts of the Pine Mountain LSR were surveyed for northern goshawks in 1997 but no goshawks were detected.

There was one nest within the Pine Mountain project boundary near White Pebble Spring and Benmore Creek but the exact date of establishment is unknown. The next nearest nests are about 2.5 miles to the northwest near the confluence of Cedar and Panther Creeks. There are nine unconfirmed sightings of northern goshawks within the Pine Mountain project boundary documented in NRIS Wildlife. Six of these sightings are near White Pebble and Violet Springs and are probably associated with the nest and territory (Fig. XX).

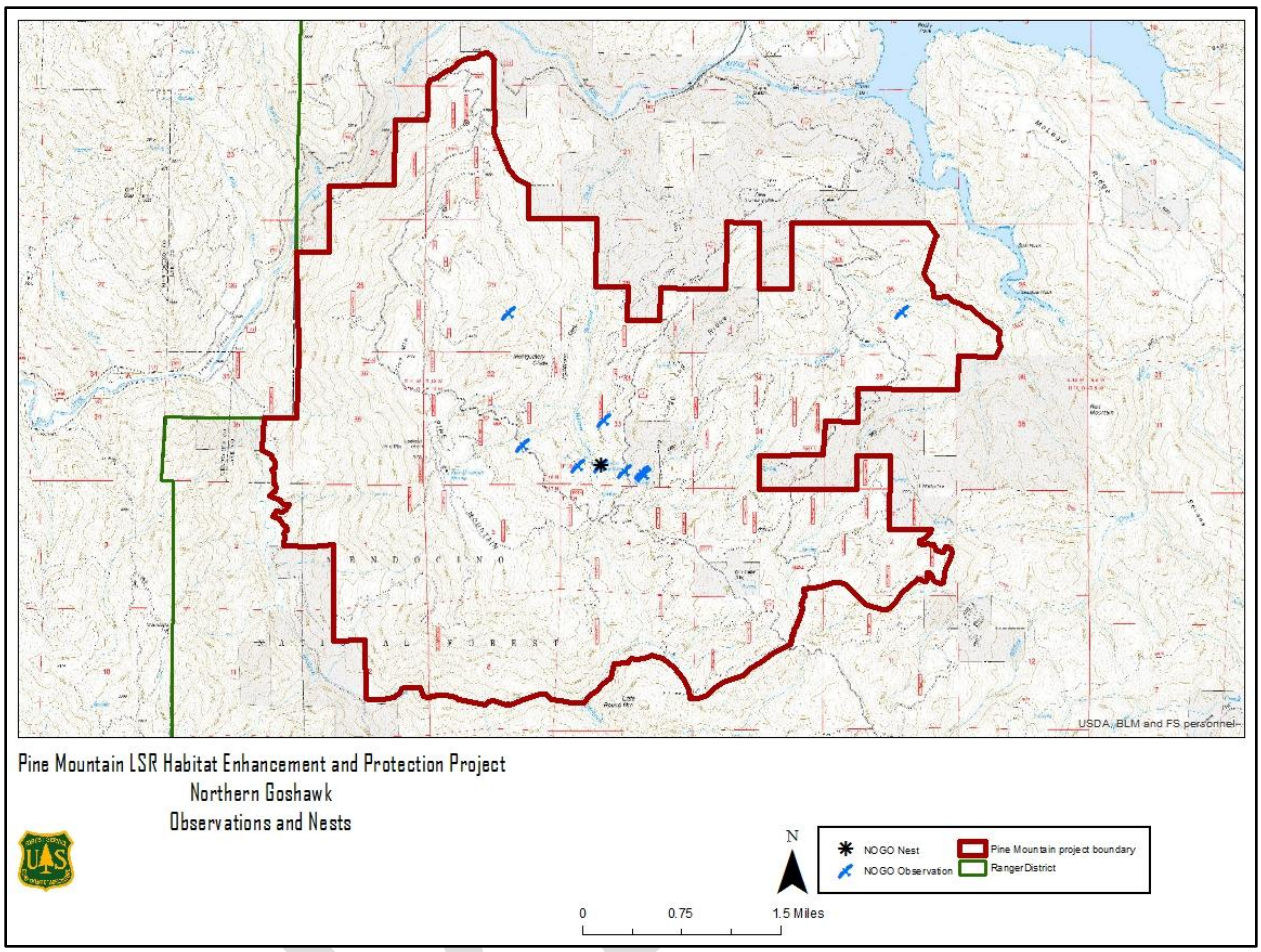

Figure 4 - Northern goshawk nest and observations within the Pine Mountain project area

Habitat

Northern goshawks nest in a variety of forest types, ages, structural conditions, and successional stages (Reynolds et al. 1992). There is suitable nesting habitat for goshawks but there are no known nests currently in the planning area. Optimum habitat for the goshawks consists of conifer/hardwood, mixed conifer, red fir, or white fir composed of trees 24" DBH or greater and a canopy closure 40% or greater. Goshawks will also use trees 12-24" DBH with canopy cover as low as 20%. Nests are generally at the bottom of the northern slope where adults can perch above the nest to see into the nest. Nest are also close to water and openings suitable for foraging (>0.1 acre in size).

Prey for the northern goshawk are ground and tree squirrels, rabbits and hares, large passerines, woodpeckers, game birds, and corvids, occasionally reptiles and insects (Squires and Reynolds 1997). Their diet may vary seasonally due to differences in timing of migration, hibernation, or periods of inactivity among prey species, the cyclic nature of some prey species, or difference in food preferences among goshawks (Reynolds et al. 1992).

Within the Pine Mountain Late Successional Reserve (LSR) (~11,722 acres) there are 3,502 acres of optimum habitat and 2,577 acres of suboptimum habitat for the Northern goshawk with the potential

for 2,963 acres of optimum and suboptimum habitat in the future. The LSR could support 10 nesting home ranges (600 core acres) (USFS 2000).Based on CWHR data there is currently 1272 acres of conifer hardwood and 5247 of mixed conifer within the project area (Table 1).

Design Features

- Restrict habitat modifying activities between March 1st and August 31st within primary nest zones
- Restrict loud and/or continuous noise within ¼ mile of active nest sites during March 1st – August 31st

Alternative 1 – No Action

The Northern goshawk and its habitat would not be directly affected by the No Action alternative however indirect effects include the loss of nesting and foraging habitat. Although stands of mature coniferous forests may continue to advance in the short term as well as the creation of snags and dead and down material, they will eventually be lost to natural disturbances. Without treatment in the planning area, areas of early seral habitat are not created or maintained to become mature conifer stands to provide nesting habitat in the future. Goshawks forage in more open stands and under this alternative the forest will continue to become denser and close in open foraging areas.Open areas also provide habitat for goshawk prey species in the understory. Diversity of the understory will be lost as the canopy continues to close. Without the treatment there is also the increasing risk of losing habitat to stand replacing wildfires or other natural disturbances.

Alternative 2 – Proposed Action

Direct Effects

The proposed action will have no direct effects on northern goshawk as there are no known nesting goshawks within the project area.

Indirect Effects

The proposed action may have indirect effects on the northern goshawk. There are 1272 acres of montane hardwood/conifer and 5247 acres of Sierran mixed conifer habitats within the project area. Within treatment units that will receive Treatment Prescription 3 there is currently 48 acres of montane hardwood/conifer and 1432 acres of Sierran mixed conifer and after treating these units it is projected that there will be 65 acres of montane hardwood conifer and no change in the acreage of Sierran mixed conifer. Canopy cover will be maintained at a percentage based on the habitat designation for northern spotted owls and will not be reduced below 40%. Although the density of trees will be reduced the trees that will be retained will be the largest available that exhibit late seral elements.

Treatment prescription 1 will treat early successional plantations and will improve the health the stand encouraging growth in to mid and late successional habitat that is beneficial to northern goshawk. This

treatment will reduce densities to 70-200 trees per acre which may create open areas for goshawks to forage.

Treatment prescription 2…

Prescribed fire, by itself or that may follow mechanical or hand treatment, will reduce the amount of small diameter surface fuel and is expected to kill some understory vegetation within timbered stands and suppress brush growth. Burning may kill larger trees within timbered stands but is expected to be less than 10% mortality in trees greater than 16" diameter at breast height.Mortality in the understory, and potential mortality in the overstory, will help contribute to the mosaic of openings required by northern goshawk for foraging.

Alternative 3 –No New Temporary Roads

Alternative 3 would have the same direct effects on northern goshawk as the proposed action, Alternative 2.

Indirect effects could include disturbance from the need for more skid trails to haul timber to roads or landings. To mitigate this effect there would be a LOP enforced within ¼ mile of any known active nests.

Alternative 4 – No Commercial Thinning in Riparian Reserves

Alternative 4 would have the same direct effects on northern goshawk as the proposed action, Alternative 2.

Fuel, either on the ground or ladder, left behind when not thinning commercially in riparian reserves could contribute to indirect effects. Canopy fire due to crowning and torching would be more likely potentially leading to a loss of habitat.

Alternative 5 – No Commercial Thinning in Units 3a, 19, 24b, and 33b(Northern Spotted Owl Nesting Habitat)

Alternative 5 would have the same direct and indirect effects on northern goshawk as the proposed action, Alternative 2.

Indirect effects from not commercially thinning in units 3a, 19, 24b, or 33b include the potential for crown fires. This alternative does vary too much from alternative 2 since it is only excluding 60 acres from treatment (Table X).

Table 16 - CFA comparison of alternatives 2 and 5

Crown Fire Activity	Alternative 2	Alternative 5
Surface	92%	89%
Crown	4%	6%
Torching	5%	5%

Bald Eagle

Species Account

There is one unconfirmed observation of a bald eagle near Montgomery Glade within the project area. Pacific Gas & Electric conducts surveys around Lake Pillsbury. There are nests near Lake Pillsbury but outside of the Pine Mountain project boundary. The Rice Fork nest (Nest A) was first found active in 2001 and last showed evidence of nest rebuilding/construction in 2012. A new nest (Nest B) was found in 2013 north of Nest A and had a large adult in the nest. Both nests are within ½ mile of the Pine Mountain planning area. There are also several observations of eagles along the Eel River, but outside of the project boundary.

Lake Pillsbury and the Eel River to the north of the planning area are suitable habitat for the bald eagle.

Habitat

Optimum breeding season habitat for eagles is conifer/hardwood, Douglas fir, mixed conifer, or ponderosa pine with greater than 20% crown closure. Nests are generally found in mature or old-growth trees such as dominant sugar and ponderosa pines with large limbs and open crowns, snags, cliffs, rock promontories, and rarely on the ground or on human-made structure such as power poles and communication towers (USFWS 2007).

Bald eagles require large bodies of water and/or free-flowing rivers with adjacent snags or other structures for perching. They are opportunistic feeders and fish comprise most of their diet but they also prey on waterfowl, shorebirds/colonial waterbirds, small mammals, turtles, and carrion. Ideal nest sites are no more than a mile from a foraging area. Eagles may be seen foraging in the planning area of Pine Mountain due to its proximity to Lake Pillsbury and the Eel River but nesting is unlikely.

Design Features

- Retain all snags >10” DBH (unless deemed a hazard to firefighter safety)
- Restrict activities that may disrupt reproduction between January 1 – July 31 within a primary nest zone (1/2 mile around known bald eagle nests)

Alternative 1 – No Action

Bald eagles are not likely to be nesting in the Pine Mountain planning area but their foraging habitat could be indirectly affected under the No Action alternative. Without treatments the likelihood of a stand replacing wildfire increases and may affect areas outside of the planning area and potential nesting areas for the eagle.

Alternative 2 – Proposed Action

Direct Effects

The project will have no direct effect on bald eagles because there are no eagles nesting within the project boundary.

Indirect Effects

The proposed action may have indirect effects on bald eagles. There are 48 acres of montane hardwood/conifer, 29 acres of Douglas-fir, 1432 acres of Sierran mixed conifer, and 114 acres of ponderosa pine habitats that will receive Treatment Prescription 3. Post treatment the only acreage change is the montane hardwood conifer that increases to 65 acres. Canopy closure will not be reduced below 40%. Although it is unlikely that bald eagles will be nesting within treatments units, potential nesting trees are retained because the treatment aims to retain the largest and most vigorous trees that exhibit late seral characteristics.

Treatment prescription 1 will treat early successional plantations and will improve the health the stand encouraging growth in to late successional habitat that is could provide resting structures for bald eagles.

Treatment prescription 2…

Snags are important to bald eagles as roost or nest trees and may be removed during mechanical treatments. During treatment all snags >10" DBH (unless deemed a hazard to firefighter safety) will be retained.

Prescribed fire, by itself or following hand or mechanical treatments, may consume smaller diameter snags but larger snags are generally not consumed. Smaller snags may also be created by prescribed fire but will likely be smaller than those generally used by bald eagles.

Alternative 3 –No New Temporary Roads

Alternative 3 would have the same direct and indirect effects on bald eagle as the proposed action, Alternative 2.

Alternative 4 _ No Commercial Thinning in Riparian Reserves

Alternative 4 would have the same direct effects on bald eagle as the proposed action, Alternative 2.

Without commercially treating riparian reserves torching and crowning are more likely than if treated. This could indirectly affect bald eagle by removing perches along streams or creeks they may be using for foraging.

Alternative 5 – No Commercial Thinning in Unit 3a, 19, 24b, and 33b(Northern Spotted Owl Nesting Habitat)

Alternative 5 would have the same direct effects on bald eagle as the proposed action, Alternative 2.

Indirect effects from not commercially thinning in units 3a, 19, 24b, or 33b include the potential for crown fires. This alternative does vary too much from alternative 2 since it is only excluding 60 acres from treatment (Table X).

Pallid Bat

Species Account

When the LSRA was written in 2000 there had been no surveys conducted for bats within or in the vicinity of the LSR.

One visual survey was conducted after the LSRA was written at a PG&E Cabin near Lake Pillsbury, but no pallid bats were located during the survey.

Habitat

Pallid bats are common in desert habitats but they may also be found in oak and pine forests or open farmland (Weber 2009) but in some areas in California they may be using mixed conifer and evergreen habitats. Bats in California use day or night roosts that may be live trees or snags, rock crevices or buildings with day and night roost sites alternating (Baker et al. 2008). Baker et al. (2008) found that in the Sierra Nevada pallid bats were using live trees and snags for roosting that were consistently tall in height, large in diameter, and located in mature stands. These stands were commonly in micro-sites that have a low percentage of overstory and mid-story coverage that increased the chance of the sun warming their roost site. Roosts also may be near water sources but it is not a deciding factor (Weber 2009).

Pallid bats are gleaners and forage close to the ground (Baker et al. 2008). They prey on large flying and ground-dwelling insects, including beetles, crickets, katydids and grasshoppers, cicadas, moths, spiders, scorpions, and centipedes. Occasionally they will take small lizards and mice (Weber 2009).

There is suitable roosting habitat for pallid bats in the form of cavities in live and dead trees.

Design Features

- Retain all snags >10" DBH (unless deemed a hazard to firefighter safety)
- Limited Operating Period from May 15 to August 15 if within 300 feet of any rock outcrop or other known roost structure of site for protection from noise disturbance.

Alternative 1 – No Action

Pallid bats and their habitat would not be directly affected by alternative 1, No Action. Indirect effects could include loss of roosting habitat to natural disturbances such as beetle infestations or wildfires. Pallid bat prey require ground cover of grasses or forbs and under this alternative, as the forest continues to become overcrowded, the sunlight does not reach the ground to promote growth of ground cover, thus reducing habitat for prey.

Alternative 2 – Proposed Action

Direct Effects

Pallid bats may be directly affected by the removal of trees and snags that may be used as roosts. Within Treatment Prescriptions 3 there is 1432 acres of Sierran mixed conifer, 125 acres of oak habitat types, and 114 acres of ponderosa pine and after treatment there will be an increase in the amount of oak habitat available (142 acres). Thinning will decrease tree density but is focused on retaining the largest and most vigorous trees but may still remove a roost tree being used by pallid bats.

Prescribed fire, applied by itself or following hand or mechanical treatments, may also remove roost trees used by pallid bats. Snags that are consumed by prescribed are generally small in diameter and the larger snags likely to be used by bats are less likely to be lost to fire. Prescribed fire can also create smaller snags that may be used as roost trees.

Indirect Effects

Indirect impacts to the pallid bats may occur with the removal of shrubs, grasses and forbs, and litter and duff. Since pallid bats forage low to the ground there may be a temporary reduction in prey available during fuels reduction. Post-thinning and post-burning shrubs may take 1-10 years to grow back. Forbs and grasses can see regrowth 1-2 years post-treatment (thinning and/or burning) and sees minimal mortality. Mortality is common where skidding or pile burning occurs and during prescribed burning mortality is mostly above ground biomass.

Alternative 3 –No New Temporary Roads

Alternative 3 would have the same direct effects on pallid bats as Alternative 2.

By not creating new temporary roads disturbance to forbs and grasses could increase because more skid trails will need to be developed. This could lead to a temporary decrease in forage areas for pallid bats. Depending on the disturbance created by the skid trails and how long the skid trail is used it may take 1-2 years, or longer, for the grasses and forbs to recover.

Alternative 4 –No Commercial Thinning in Riparian Reserves

Alternative 4 would have the same direct effects on pallid bats as Alternative 2.

Without treating commercially in riparian reserves, there is more fuel left available to burn during a wildfire. Drainages can be a major path for fires and it is likely that fires will burn more intensely in riparian reserves. Under this alternative torching remains at 19% when if treated commercially torching is only 5% of the area (Table x).

Table 17 - Crown Fire Activity comparing Alternative 2 and Alternative 4

CFA	Alternative 2	Alternative 4
Surface	92%	73%
Crown	4%	8%
Torching	5%	19%

Alternative 5 –No Commercial Thinning in Units 3a, 19, 24b, and 33b (Northern Spotted Owl Nesting Habitat)

Alternative would have the same direct and indirect effects on pallid bats as Alternative 2.

Townsend's Big-eared Bat

Species Account

When the LSRA was written in 2000 there had been no surveys conducted for bats within or in the vicinity of the LSR.

One visual survey was conducted after the LSRA was written at a PG&E Cabin near Lake Pillsbury, but no Townsend's big-eared bats were located during the survey.

Habitat

Townsend's big-eared bats use a variety of habitats, mostly montane forests with pine, fir, and aspen trees surrounded by shrub and grasslands. These bats roost in caves, cliffs, rock ledges, abandoned mines, buildings, and in open attics. Roosting places are generally cooler with a lot of air movement and have open ceilings as Townsend's big-eared bats do not crawl well (Sullivan 2009). They tend to have high fidelity towards maternity roosts often returning year after year to certain roosts, particularly caves (Fellers and Pierson 2002).

Townsend's big-eared bats in the west typically forage in dense foliage. Fellers and Pierson (2002) found that in coastal California, bats mainly forage in riparian woodlands. The bats would vacate their roost at night and follow densely vegetated gullies and then spent a majority of their time foraging in forested habitats, utilizing the forest edge but avoiding open areas. Their prey tends to be exclusively moths but they will also eat beetles, flies, and other small insects (Sullivan 2009).

There is suitable foraging habitat within the Pine Mountain planning area for Townsend's big-eared bats, but lacks caves or other roosting structures.

Design Features

- Limited Operating Period from May 15 to August 15 if within 300 feet of any rock outcrop or other known roost structure of site for protection from noise disturbance

Alternative 1 – No Action

Townsend's big-eared bats would not be directly affected by alternative 1 but indirect effects may include an increase in vegetation density which would increase foraging opportunities for the bats. On the other hand, this dense forest is prone to loss due to wildfires or bark beetle infestations.

Alternative 2 – Proposed Action

Direct Effects

The proposed action would not have direct effects on Townsend's big-eared bats as there are no significant roosting structures within the project area.

Indirect Effects

The proposed action may have indirect effects on Townsend's big-eared bats by reducing the amount of available foraging habitat. These bats forage in denser foliage but the proposed action proposes to reduce density within the project area through hand or mechanical thinning and/or prescribed burning. Shrubs and forbs and grasses will also be reduced through the same actions, but have a shorter regrowth time, 1-10 years and 1-2 years, respectively.

Alternative 3 –No New Temporary Roads

Alternative 3 will have the same direct and indirect effects as Alternative 2 on Townsend's big-eared bats.

Alternative 4 – No Commercial Thinning in Riparian Reserves

Alternative 4 will have the same direct effects as Alternative 2 on Townsend's big-eared bats.

Townsend's big-eared bats forage in dense foliage in riparian woodlands and this alternative may maintain a denser forest structure. This alternative would indirectly benefit bats by providing preferred foraging habitat.

Alternative 5 – No Commercial Thinning in Units 3a, 19, 24b, and 33b (Northern Spotted Owl Nesting and Roosting Habitat)

Alternative 5 will have the same direct effects as Alternative 2 on Townsend's big-eared bats.

Townsend's big-eared bats forage in dense foliage in riparian woodlands and this alternative may maintain a denser forest structure. This alternative would indirectly benefit bats by providing preferred foraging habitat.

Pacific Marten

Species Account

When the LSRA was written in 2000 there had been no sightings of martens and no surveys conducted.

There are no reported sightings of martens within the Pine Mountain project area in the NRIS Wildlife database. There is an observation on the north east end of Lake Pillsbury at Sunset campground about three miles, as the crow flies, from the project boundary. There are two other observations further from the project (about 6 miles in either direction) area at Bear Creek campground and near the 19N74 road.

Habitat

Pacific martens inhabit coniferous forests, specifically late successional stands with a sufficient amount of dead and down material (USFS 2004). Denning and roosting sites tend to be in forests with trees

greater than 12" DBH and a canopy cover of greater than 40%. Preferred stands are generally thick with basal area 175 ft ^{2}or greater. Historically martens have inhabited the higher elevations (>5,500 ft) of the Mendocino National Forest in true fir stands but most recent records indicate that they may be moving into the conifer stands at lower elevations (USFS 1995). Martens are typically associated with these higher elevations and true fir forests that support frequent winter snowfall (MIS report). The Pine Mountain LSR, 1800 – 4000 ft elevations with late successional conifer and hardwood-conifer habitat may be suitable for martens but they are less likely to use these lower elevations if fishers are present (MIS report).

Travel corridors are important for martens as protection from predators. The Habitat Capability Model for the marten in the Mendocino National Forest Land and Resource Management Plan suggests that optimum travel corridors are at least300 feet wide within mature stands and at least 600 feet wide adjacent to open, uncanopied areas, such as meadows. Corridor widths down to 150 feet for mature stands and 300 feet adjacent to open areas are acceptable but less desirable. Canopy closure for travel corridors should be at least 50% (USFS 1995). A study in Utah found that martens were rarely detected in sites with greater than 25% open areas (Hargis et al. 1999) and in Yellowstone National Park, martens did not readily cross open areas wider than 100 meters (Brissonetter and Sherburne 1993).

Open areas wider than 100 m could be considered roads which could be barriers to martens. The Habitat Capability Model in the Mendocino LRMP recommends 1-2 miles of road per square mile for moderate quality habitat and less than one miles of road per square mile for high quality habitat.

Snags, live trees with deformities, and down wood are important structures for martens for den and rest sites, protection from predators, and for hunting and foraging sites (Bull et al. 2005). The MNF LRMP suggests three snags per acre greater than 24" DBH for denning or resting and at least three snags per acre greater than 15" DBH for foraging. As for down logs, the MNF LRMP suggests 20 per acre at least 15" by 15' long or for sub-optimum habitat, 10-19 down logs per acre at least 15" by 15' long. Based on Habitat Capability Model for the marten found in the Mendocino LRMP (1995), snag replacement densities should be at least 6 snags per acre greater than 24" DBH for sub-optimum habitat (>9 snags/acre for high quality habitat) or greater for resting and denning and at least 15" DBH in foraging habitat.

Within the whole Pine Mountain LSR (~11,772 acres) there are 3,501 acres of optimum habitat and 2,363 acres of suboptimum habitat for the marten. There is a potential for an additional 1,963 acres of suitable habitat within the LSR. Currently the LSR could support 2.8 male home ranges and 5.6 female home ranges with the additional acreage another 1.4 male and 2.8 female home ranges could be supported (LSR citation).

Design Features

- A Limited Operating Period will be enforced from February 1 to June 30 if activities that could disrupt reproduction are occurring within ¼ mile of a known denning site
- All snags >10" DBH will be retained unless they pose a hazard to firefighter safety or have the potential to spread fire across control lines.

- Existing large coarse woody debris (>15" diameter, or largest available) will be retained at 5-10 tons per acre

Alternative 1 – No Action

Under the No Action alternative there is no direct effect on the Pacific marten.

Indirect effects include the creation of true fir stands. As the white fir and other firs overtake the conifer-hardwood stands habitat is created for the marten. Martens also inhabit conifer stands at lower elevations which could be lost without treatment. Although increased dead and down would benefit the marten it also poses a greater risk of wildfire. Without treatment the stands become more susceptible to a stand replacing wildfire and other natural disturbances.

Alternative 2 – Proposed Action

Direct Effects

Martens use large diameter trees, snags, and downed logs for resting and denning. In the case of a lack of denning or resting structures, it is expected that the proposed action will create these structures, or protect and enhance the structures that are available.

Within the units that will receive Treatment Prescription 3, the desired future conditions are enhanced and protected late successional habitat. The current acreage of late successional habitat within these units is 666 acres and post-treatment this increases to 1663 acres. This indicates that the available resting and denning habitat is more than doubled post-treatment.This is accomplished by focusing tree retention on species and trees that provide structures more suitable to late successional species.

Snags that may be used by martens as denning structures may be removed during treatments, either by hand or mechanical or prescribed fire. There are design features in place to retain all snags. Preferred snags are generally greater than 15" DBH for foraging and 24" DBH for denning. It is unlikely that prescribed would consume larger snags and it may even create snags through mortality in the overstory.

Downed logs that may be used by martens as denning or resting structures are expected to be consumed by prescribed fire, either following hand or mechanical treatments or when applied by itself. There are design features in place to retain existing large coarse woody debris up to 5-10 tons per acre. Although it is likely some large logs would be consumed or broken up during treatments those same treatments are expected to create large woody debris through mortality.

Indirect Effects

The Mendocino LRMP dictates high quality habitat as having road densities less than one mile of road per square mile. Currently there are about 30 miles of Forest Service roads within the project area that will receive treatment (maintenance, reconstruction, decommissioning, and/or closure).The proposed action would require use 3.9 miles of existing undesignated roads, 0.58 miles of reconstruction of existing undesignated roads and 0.25 miles of new road construction. Although it could be assumed that

roads would be a barrier (as an open area) to martens, Robitaille and Aubry (2000) found that martens were as likely to be detected near roads as there were away from roads and Pereboom et al. (2008) found the marten did not avoid roads.There will also be 1.14 miles of road decommissioning which will benefit the marten in removing potential barriers.

Indirect effects could occur for the marten by reducing the canopy cover in stands receiving Treatment Prescription 3 (thinning >10" DBH). Although canopy cover in those units will not be reduced below 40%, Bulle and Blumton (1999) found that radio collared martens avoided harvested stands that had less than 50% canopy closure.

Alternative 3 –No New Temporary Roads

Alternative 3 will have the same direct effects on martens as Alternative 2.

Indirect effects may be less under this alternative since no new temporary roads will be created thus reducing the acreage of open areas that may act as a barrier to marten movement.

Alternative 4 –No Commercial Thinning in Riparian Reserves

Alternative 4 will have the same direct effects on marten as Alternative 2.

This alternative may indirectly effect martens by maintaining a higher basal area within stands.

Alternative 5 –No Commercial Thinning in Units 3a, 19, 24b, and 33b (Northern Spotted Owl Nesting Habitat)

Alternative 5 will have the same direct effects on marten as Alternative 2.

This alternative may indirectly effect martens by maintaining a higher basal area within stands.

Fisher

Species Account

There no surveys for fishers conducted within the Pine Mountain LSR. A fisher was sighted by Bob Faust in 2002 near White Pebble Spring and in 2015 archeologist technicians sighted a fisher near the end of the 17N40 road. In October 2015, a fisher was sighted along M1 south of the project area by Laura Bates, OHV Technician, and myself.

In 2004, the USFWS published a proposed rule that listed population on the western coast and Sierra Nevada Mountains as a Distinct Population Segment (USFWS 2004). The fisher was petitioned for listing as threatened or endangered last in 2010, and in 2012 the USFWS concluded that listing may be warranted, but is precluded. In 2016, there was a withdrawal of the proposed rule to list the west coast distinct population segment of fisher.

Habitat

Fishers were historically distributed throughout the mature and old growth forest on the Mendocino National Forest (USFS 1995). They inhabit large areas of mature mixed conifer forests, specifically closer to streams, farther from openings, with large trees, dense canopy closure, and a high density of snags (Beyer and Golightly 1996). Optimum denning/resting habitat consists of old-growth and/or mature conifer, mixed conifer/hardwoods, and/or hardwoods. Foraging habitat consists of mid-successional habitat of the same species as denning/resting habitat. A heterogeneous forest structure is important for fishers in denning, resting, and foraging habitats. The Mendocino LRMP (1995) suggests 3-4 layers for high quality habitat and 2-3 layers for moderate habitat, plus shrubs.

Large trees with cavities are extremely important for fisher reproduction. These attributes provide weather protection for kits during the typically cool and wet spring and protection from predators. The female may use alternate den sites until the kits are weaned and after kits are weaned and able to roam with their mother, alternate den sites or other tree cavities are used because they offer protection from predators (Lofroth et al. 2010). Most cavities are a result of heartwood decay (USFWS 2012), and access to the cavity is through a broken branch, cracks in the trunk, fire scars, or woodpecker hole. Canopy cover in den locations is high, 70–100 percent (Lofroth et al. 2010).

Dens can also be used as rest sites, and will also include such structures as hollow logs, fallen trees, witches' brooms or mistletoe-infected growths, deformed branches, and occasionally rocks, stick nests, and slash piles. Rest site trees, like den sites, are usually some of the largest diameter trees available, including conifers and hardwoods. Hardwood species are often used according to California studies and black oaks in particular. In northern California, fisher rest sites have a canopy cover of at least 40 percent (USFWS 2004).

Fishers tend to avoid open areas and travel corridors are important features for them on the landscape. In high quality habitat road desnity is 0-0.5 miles per square mile and in moderate quality habitat it is 0.5-2 miles per square mile.In optimum habitat openings without cover are generally less than an acre in size and in moderate habitat they are 1-2 acres. Travel corridors should be 600 feet with a canopy cover greater than 60% for optimum habitat and 300-600 feet wide with 50-60% canopy cover for moderate habitat,in mature stands. Travel corridors adjacent to clearcuts should be doubled in width for optimum and moderate habitat (MNF LRMP 1995).

At the time the LSRA was written there was 3,502 acres of optimum habitat and 2,577 acres of suboptimum habitat within the LSR. The LSR does not currently contain the required amount of habitat to maintain one male home range but may be utilized as connectivity between LSRs. There is a potential for 2,963 additional acres to grow into mid to late successional habitat that could, provided it was optimum habitat, support one male home range or one or two female home ranges (LSR citation).

Design Features

- A Limited Operating Period will be put in place from February 1 to June 30 if within ¼ mile of a known denning site
- All snags >10" DBH will be retained unless they pose a hazard to firefighter safety or have the potential to spread fire across control lines.

- Existing large coarse woody debris (>15" diameter, or largest available) will be retained at 5-10 tons per acre

Alternative 1 – No Action

Under the No Action alternative there is no direct effect on the Pacific fisher. Indirect effects to fishers include old-growth and mature stands developing an understory of shade tolerant species that may out compete the conifer and hardwood component generally selected by the fisher. Travel corridors and small openings would be maintained for a time until the surrounding forest began to encroach upon these features. Without treatment the stands remain overstocked and become more susceptible to a stand replacing wildfire and other natural disturbances.

Alternative 2 – Proposed Action

Direct Effects

Fishers use large diameter trees, snags, and downed logs for resting and denning. In the case of a lack of denning or resting structures, it is expected that the proposed action will create these structures, or protect and enhance the structures that are available.

Within the units that will receive Treatment Prescription 3 (>10" DBH thinning) the desired future conditions are enhanced and protected late successional habitat. The current acreage of mature seral habitat within these units is 666 acres and post-treatment this increases to 1656 acres and currently 666 acres of late successional habitat and post-treatment this increases to 1663. This indicates that the available resting and denning habitat is more than doubled post-treatment. This is accomplished by focusing tree retention on species and trees that provide structures more suitable to mature seral species.

Downed logs that may be used by fishers as denning or resting structures are expected to be consumed by prescribed fire, either following hand or mechanical treatments or when applied by itself. There are design features in place to retain existing large coarse woody debris up to 5-10 tons per acre. Although it is likely some large logs would be consumed or broken up during treatments those same treatments are expected to create large woody debris through mortality.

Indirect Effects

The Mendocino LRMP dictates high quality habitat as having road densities less than 1/2 mile of road per square mile. Currently there are about 30 miles of Forest Service roads within the project area that will receive treatment (maintenance, reconstruction, decommissioning, and/or closure).The proposed action would require use 3.9 miles of existing undesignated roads, 0.58 miles of reconstruction of existing undesignated roads and 0.25 miles of new road construction. The construction of new roads could create barriers for fishers.On the other hand there will be 1.14 miles of road decommissioned which will benefit the fisher by removing potential barriers.

Canopy cover within Treatment Prescriptions 3 units will be maintained based on the NSO habitat designation. In some units the canopy cover may be reduced to 40%. Where dens are likely to be located, concurrent with NSO nesting/roosting habitat, canopy cover will not be reduced below 60%. Although this is below the identified canopy cover percentage by Lofroth et al. (2010) preferred in denning sites, there are no known den sits within the Pine Mountain project area.

Treatment prescription 1 will treat early successional plantations and will improve the health the stand encouraging growth in to mid and late successional habitat that is beneficial to fisher.

Treatment prescription 2…

Alternative 3 –No New Temporary Roads

Alternative 3 will have the same direct effects on fisher as Alternative 2.

Indirect effects may be less under this alternative since no new temporary roads will be created thus reducing the acreage of open areas that may act as a barrier to fisher movement.

Alternative 4 –No Commercial Thinning in Riparian Reserves

Alternative 4 will have the same direct effects on the fisher as Alternative 2.

Fuel, either on the ground or ladder, left behind when only thinning up to 10" DBH trees could contribute to indirect effects. Heavier fuels left behind could contribute to negative effects in the case of a wildfire.

Alternative 5 –No Commercial Thinning in Units 3a, 19, 24b, and 33b (Northern Spotted Owl Nesting Habitat)

Alternative 5 will have the same direct effects on fisher as Alternative 2.

Fuel, either on the ground or ladder, left behind when only thinning up to 10" DBH trees could contribute to indirect effects. Heavier fuels left behind could contribute to negative effects in the case of a wildfire.

Fringed Myotis

Species Account

There have been no surveys conducted for bats within the Pine Mountain project area. It is likely that fringed myotis use the project area for roosting.

Habitat

The fringed myotis uses caves, crevices, mines, and buildings for roosting, hibernacula, and maternity colonies (Keinath 2005; CWHR 2008). They day and night roost under bark and in tree hollows, and in northern California they day roost in snags only (Keinath 2005; Weller and Zabel 2001). Medium to large diameter snags are important day and night roosting sites (Weller and Zabel 2001).

In California, this species is found from 1300 to 2200 meters in elevation in pinyon-juniper, valley foothill hardwood and hardwood-conifers (CWHR 2008).

There is increased likelihood of occurrence of this species as snags greater than 30 cm in diameter increases and percent canopy cover decreases (Keinath 2005). Large snags and low canopy cover, typical of mature, forest habitat types, offer warm roost sites (Keinath 2005). Decay classes were two to four (Keinath 2005) in ponderosa pine, Douglas-fir, and sugar pine.

Home range size varies with insect abundance, increasing as the number of available insects decreases. Keinath (2005) reports study averages about 100 acres. Travel distances from roosting to foraging areas are up to eight kilometers (Keinath 2005).

The fringed myotis consumes primarily beetles, and is supplemented by moths and fly larvae (Keinath 2005) captured in the air and on foliage (CWHR 2008).

Design Features

- All snags >10" DBH will be retained unless they pose a hazard to firefighter safety or have the potential to spread fire across control lines

Alternative 1 – No Action

Fringed myotis and their habitat would not be directly affected by alternative 1, No Action. Indirect effects could include loss of roosting structures, such as snags, to natural disturbances such wind or wildfires. Without treatment trees continue to be suppressed and compete for resources resulting in a lack of larger trees to replace larger snags that have fallen, therefore, reducing the number of available roosting structures.

Alternative 2 – Proposed Action

Direct Effects

The proposed action may have a direct effect on fringed myotis by removing snags that may be used for roosting. Snags may be removed by prescribed fire, either following a hand or mechanical treatment or by itself, but in general larger snags are not consumed. Although fire usually creates smaller snags, larger snags may be created through mortality in the overstory.

Indirect Effects

By reducing stand density within the Pine Mountain project area fringed myotis will have a more open understory in which to forage.

Alternative 3 –No New Temporary Roads

Alternative 3 will have the same direct and indirect effects on fringed myotis as Alternative 2.

Alternative 4 –No Commercial Thinning in Riparian Reserves

Alternative 4 will have the same direct and indirect effects on the fringed myotis as Alternative 2.

Alternative 5 –No Commercial Thinning in Units 3a, 19, 24b, and 33b (Northern Spotted Owl Nesting Habitat)

Alternative 5 will have the same direct and indirect effects on fringed myotis as Alternative 2.

Foothill Yellow-legged Frog

Species Account

Foothill-yellow legged frogs have been observed in several creeks within the Pine Mountain project area, including Bemore, Packsaddle, and Bucknell Creeks.

Habitat Account

The foothill yellow-legged frog occupies shallow portions of perennial streams and rivers with cobble-size substrate within open, sunny banks, in forests, chaparral, and woodland habitats (Californiaherps.com 2000, Jennings and Hayes 1994). Forest habitats include valley-foothill hardwood, valley-foothill hardwood-conifer, valley-foothill riparian, ponderosa pine, mixed conifer, coastal scrub, mixed chaparral, and wet meadow types (CDFG 2005). Gravel and cobble river bars along riffles and pools with at least 20% shading seems to be preferred by sub-adults and adults (Ashton et al. 1998). Breeding habitat is typically classified as a stream with riffles containing cobble-sized or larger rocks as substrate (Zeiner 1990).Frogs may also be found in moderately vegetated backwaters, isolated pools, and slow moving rivers with mud substrates (Ashton et al. 1998).

Historic distribution of the frog was known to occur in most Pacific drainages from the Santian River system in Oregon to the San Gabriel River system in California (Jennings and Hayes 1994).

Design Features

- Limited Operating Period after first significant rain (1.5 inches) on or after October 15th through May 31, if working within 300 feet of potentially suitable habitat
    - For water drafting sites, the LOP is extended through July 30 if frog eggs or tadpoles are present
- Adequate screening on intake hoses, mesh spacing with holes no greater than 2 mm in size. The end of the hose should be in the deepest and swiftest available part of the stream or in the deepest part of the pond. In ponds, drafting is restricted to maintain a minimum of 20” of water in the deep end of the pool.

Alternative 1 – No Action

Under the No Action alternative, fuels will continue to accumulate and contribute to the potential of an uncharacteristic, stand replacing fire. This could lead to a loss of riparian vegetation and the shade required by foothill yellow-legged frogs.

Alternative 2 – Proposed Action

Direct Effects

There will be no direct effects on the foothill yellow-legged frog under Alternative 2.

Indirect Effects

Under the proposed action there are several stipulations for treating within riparian zones. These stipulations will help retain the habitat needed for the frogs by reducing sedimentation from treatment activities and maintaining canopy cover for shading.

Alternative 3 –No New Temporary Roads

Alternative 3 will have the same direct and indirect effects on foothill yellow-legged frog as Alternative 2.

Alternative 4 –No Commercial Thinning in Riparian Reserves

Alternative 4 will have the same direct effects on foothill yellow-legged frog as Alternative 2.

Fuel, either on the ground or ladder, left behind when only thinning up to 10" DBH trees could contribute to indirect effects. Heavier fuels left behind could contribute to negative effects in the case of a wildfire.

Alternative 5 –No Commercial Thinning in Units 3a, 19, 24, and 33b(Northern Spotted Owl Nesting Habitat)

Alternative 5 will have the same direct effects on foothill yellow-legged frog as Alternative 2.

Fuel, either on the ground or ladder, left behind when only thinning up to 10" DBH trees could contribute to indirect effects. Heavier fuels left behind could contribute to negative effects in the case of a wildfire.

Western Pond Turtle

Species Account

There are no recorded sighting of western pond turtle within the project boundary but there is suitable habitat. Western pond turtles historically ranged from Puget Sound to the Sierra San Pedro Martirs in Baja California Norte (Holland 1994).

Habitat

The pond turtle is a habitat generalist occurring in in permanent and ephemeral habitats below 2500 ft in elevation (USFS 1995). Turtles have been sighted in rivers, streams, lakes, ponds, permanent and ephemeral wetland habitats, and altered habitats including reservoirs, abandoned gravel pits, stock ponds, and sewage treatment plants. Holland (1994) found that observations made in the altered habitats tend to be turtles that have been displaced by the destruction of natural habitats.

The size of water sources that turtles utilize vary on a seasonal and local basis. Turtles may use ephemeral ponds only a few meters in extent while others use lakes that are several dozen square kilometers. Turtles also inhabit ponds that may vary in size by 50% or more in a year and where water is present only portions of the year.

When water level varies turtles may aestivate in the mud or in upland areas adjacent to the watercourse during late-summer/early-spring. Turtles need emergent basking sites such as rocks, logs, or emergent vegetation. In places where these basking structures are absent turtles use refugia in the form of undercut banks, submerged vegetation, rocks, logs, or mud. Turtles avoid areas that lack sufficient refugia and areas of open water that may lack nearby refugia and/or basking sites. Turtles overwinter in the mud at the bottom of ponds or in undercut areas under banks or logs or areas of emergent vegetation (USFS 1995).

Hatchlings additionally require shallow, eutrophic, warm areas which are typically at the margins of natural waterways (Buskirk 2002).

Terrestrial habitats are less well understood. In southern California animals spend only one to two months in terrestrial habitats while animals in the northern portions of the range can be terrestrial for up to eight months (Lovich and Meyer 2002). Animals have been documented to overwinter under litter or buried in soil in areas with dense understories consisting of vegetation such as blackberry, poison oak and stinging nettle which reduces the likelihood of predation (Davis 1998).

Design Features

- Retain existing large coarse woody debris (>15" diameter, or largest available) up to 5-10 tons per acre
- Adequate screening on intake hoses, mesh spacing with holes no greater than 2 mm in size. The end of the hose should be in the deepest and swiftest available part of the stream or in the deepest part of the pond. In ponds, drafting is restricted to maintain a minimum of 20" of water in the deep end of the pool.

Alternative 1 – No Action

Under the No Action alternative forest density and fuel accumulations will increase contributing to the potential of an uncharacteristic, stand replacing wildfire. This could remove vegetation that turtles may use as basking sites.

Alternative 2 – Proposed Action

Direct Effects

The proposed action could directly affect western pond turtles through soil compaction during thinning activities. This could prevent turtles from aestivating or could harm turtles that are currently aestivating. This direct effect is minimized through stipulations when treating within riparian reserves.

Indirect Effects

Indirect effects may include the loss of basking structures in the form of logs or streamside vegetation. Under the riparian reserve management stipulations the loss of these features is minimized. There is also a design feature to retain large coarse woody debris.

Indirect effects may also be sedimentation from treatment activities, but this is also mitigated through the riparian reserve management stipulations in Treatment prescription 7.

Alternative 3 –No New Temporary Roads

Alternative 3 will have the same direct effects on western pond turtle as Alternative 2.

Alternative 4 –No Commercial Thinning in Riparian Reserves

Alternative 4 will have the same direct effects on western pond turtle as Alternative 2.

Fuel, either on the ground or ladder, left behind when only thinning up to 10" DBH trees could contribute to indirect effects. Heavier fuels left behind could contribute to negative effects in the case of a wildfire.

Alternative 5 –No Commercial Thinning in Units 3a, 19, 24b, and 33b (Northern Spotted Owl Nesting Habitat)

Alternative 5 will have the same direct effects on western pond turtle as Alternative 2.

Fuel, either on the ground or ladder, left behind when only thinning up to 10" DBH trees could contribute to indirect effects. Heavier fuels left behind could contribute to negative effects in the case of a wildfire.

Cumulative Effects

The cumulative effects analysis (CEA) considers past, present, and reasonably foreseeable future actions or activities. Past fire and silvicultural treatments are summarized in their respective reports. This report considers the past, present, and future actions on Forest Service Sensitive Species. Spatial boundary for this CEA will spatially be 7th field watersheds and temporally 20 years.

Past Federal Actions and Activities

Past Federal actions and activities are recorded in the Forest Service Activity Tracking System (FACTS) database. All recorded vegetation and fuels treatments are displayed in Table X and Figure X. Since these past activities contribute to the existing condition they are considered for analysis.

Table 18 - Past activities summary (1995-2015) from the FACTS database, highlighted activities contribute to the cumulative effects on Forest Service Sensitive Species

Activity	Date	On map
Broadcast Burning - Covers a majority of the unit	2002-2005	burning

Activity	Date	On map
Burning of Piled Material	2005-2013	burning
Certification of Natural Regeneration with Site Prep	1995	site prep
Certification of Natural Regeneration without Site Prep	2011	
Certification-Planted	1995-1996	tree planting
Chipping of Fuels	2004-2010	fuels work
Commercial Thin	2005-2008	logging
Fertilization	1995-1997	
Fill-in or Replant Trees	1996 and 2006	tree planting
Invasive - Mechanical /Physical	2009	
Invasive - Pesticide Application	2005	
Overstory Removal Cut (from advanced regeneration) (EA/RH/FH)	1997	logging
Piling of Fuels, Hand or Machine	2004-2012	fuels work
Plant Trees	1996,2004,2006,2010-2012	tree planting
Plantation Survival Survey	2004-2011	
Post Treatment Vegetation Monitoring	1995	
Precommercial Thin	1995-2012	fuels work
Rearrangement of Fuels	2003, 2008 and 2011	fuels work
Reforestation Need Created by Fire	2008	tree planting
Silvicultural Stand Examination	2005	
Site Preparation for Planting - Burning	2009	site prep
Site Preparation for Planting - Mechanical	2003 and 2008	site prep
Stand Silviculture Prescription	1996 and 2004	
Stocking Survey	1995-2008	
Thinning for Hazardous Fuels Reduction	2004-2012	fuels work
Tree Release and Weed	1995-2001	fuels work
TSI Need	1995-2008	
Underburn - Low Intensity (Majority of Unit)	2002-2013	fuels work
Wildfire - Fuels Benefit	2008	
Yarding - Removal of Fuels by Carrying or Dragging	2005 and 2007	logging

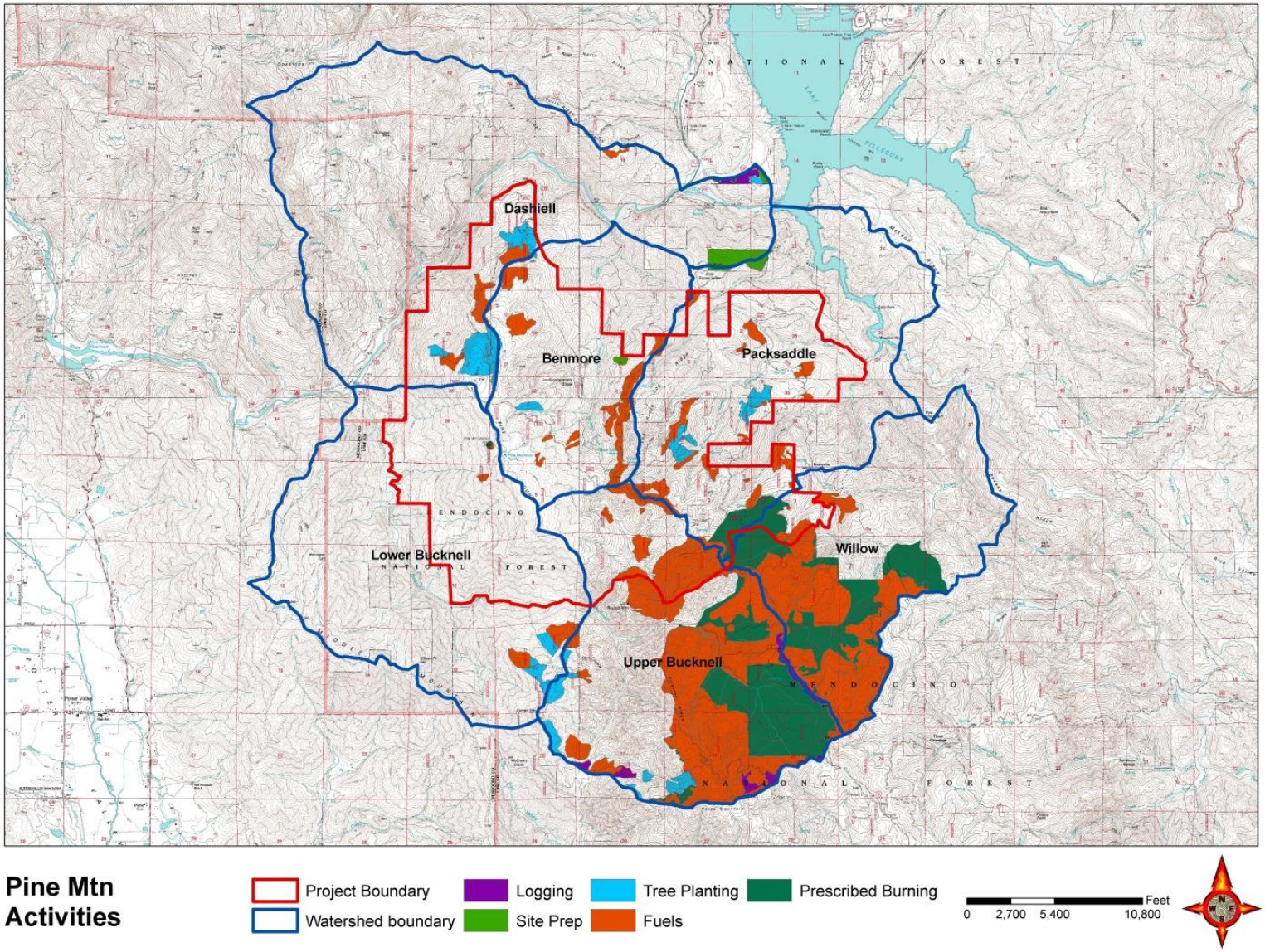

Figure 5 - Known past, present, and future actions within 7th field watersheds and 20 year

Current and Reasonably Foreseeable Future Actions

The following projects are described as current and reasonably foreseeable future actions that may be considered in addition to the proposed project for analysis. Some ongoing actions are within the Pine Mountain project area; this list includes actions within the Dashiell, Packsaddle, Benmore, Willow, Upper Bucknell and Lower Bucknell 7th field watersheds.

The list also includes some actions immediately adjacent to these watersheds that may affect the environment of the project area.

Howard Mill Project (planning complete, implementation ongoing)

The Howard Mill project is located within the Upper Bucknell Creek, Packsaddle, Willow, Bevans, Parramore, Sled Ridge, Grizzly Canyon and panther Canyon 7th field watersheds. The project encompasses about 7,400 acres. The main purpose of this project is to reduce hazardous fuel loading and competing vegetation in the mixed conifer plantations that were planted following the Round Fire in 1966. Approximately 4,900 acres have been understory burned since project implementation began.

Pine Mountain Lookout Project (planning complete, implementation ongoing)

The Pine Mountain Lookuot project is located within the Lower Bucknell Creek 7th field watershed. The project encompasses about 26 acres, and includes hazardous fuels thinning >8" DBH and pile and understory burning. The main purpose of this project is to reduce hazardous fuel loading and to lessen the risk of fire,thereby protecting the historic lookout. Thinning was completed in 2007.

Elk Mountain Fuelbreak (planning complete, implementation ongoing)

The Elk Mountain Fuelbreak project is located between the Middle Creek Campground and the Rice Fork turn off at Lake Pillsbury along Elk Mountain Rd (M-1). The project is about 700 acres, and includes hazardous fuels thinning >10" DBH and understory burning. The primary purpose of this project is to maintain a shaded fuelbreak along Elk Mountain Road, serving as a strategic control point in an area historically known for large wildfires.

Westshore Project (planning complete, implementation ongoing)

The Westshore project is located within the Welch, Mill, Boardman, and Dashiell 7th field watersheds. The project consists of 13 units and encompasses about 1,069 acres. The project includes hazardous fuels thinning >10" DBH, timber harvest, and pile and understory burning. The primary purpose of this project is to reduce hazardous fuels in the wildland-urban interface in the Lake Pillsbury Area. Timber Harvest was completed in 2013.

Streeter Ridge Project (planning complete, implementation ongoing)

The Streeter Ridge project is located within the Upper Bucknell Creek 7th field watershed. The project encompasses about 262 acres, and includes hazardous fuels thinning >10" DBH and pile and understory burning. The main purpose of this project is to reduce hazardous fuel loading and competing vegetation

in the mixed conifer plantations that were planted following the Round Fire in 1966. Thinning was completed in 2010.

Willow Creek Project*(planning complete, implementation ongoing)*

The Willow Creek project is located within the Willow, Parramore, and Bevans 7th field watersheds. The project encompasses about 335 acres, and includes hazardous fuels thinning >10" DBH and pile and understory burning. The main purpose of this project is to reduce hazardous fuel loading and competing vegetation in the mixed conifer plantations that were planted following the Round Fire in 1966. The majority of the thinning was completed in 2011 and 2013.

High Horse Project*(planning complete, implementation ongoing)*

The High Horse project is located within the Upper Bucknell, Parramore, Grizzly Canyon, and Panther Canyon 7th field watersheds. The project encompasses about 545 acres in the Horse Mountain area, and includes hazardous fuels thinning >10" DBH, timber harvest, and pile and understory burning. The main purpose of this project is to reduce hazardous fuel loading and competing vegetation in the mixed conifer plantations that were planted following the Round Fire in 1966. Timber Harvest was completed in 2007.

There are no known additional future federal actions, other than the proposed actions and alternatives described in the Pine Mountain project (Chapter 2).

There are no known timber harvesting activities within private inholdings adjacent to the project area within the 7th field watershed. This conclusion was drawn from the California Department of Forestry and Fire Protection website inventory of approved timber harvest plans (THP) from October 2015. (http://www.calfire.ca.gov/ResourceManagement/THPStatusUpload/THPStatusTable.html)

Cumulative Effects Analysis

Howard Mill, Streeter Ridge, Willow Creek, and High Horse

These projectsfocus on treating homogenous plantations planted after the 1966 Round Fire and moving them towards heterogeneous stands. Treatments reduce fuel and release suppressed vegetation allowing them to mature into late seral stands quicker than if left to self-thinning. Thinned stands with less competition for resources will be able to withstand beetle infestations and be less susceptible to torching and crown fire. These projects contribute to habitat restoration and enhancement. Habitat diversity discussion?

Pine Mountain Lookout Project

The hazardous fuels reduction around the Pine Mountain lookout will have minimal cumulative effects on Forest Service Sensitive Species. The lookout is a popular recreation site in the spring and summer and any species in the area are likely habituated to humans and noise. The amount of acreage treated in this project is insignificant in respect to the distribution of any of the Forest Service Sensitive Species.

Elk Mountain Fuel Break

The Elk Mountain fuelbreak is along 17 miles of Elk Mountain road which bisects thePine Mountain project area north to south. The fuelbreak removes trees less than 10" DBH to create a 300' wide fuel break along the road. The fuelbreak will provide a strategic control point to fight wildfire and will help protect habitat in an area historically known for larger wildfires. As a fuel break, this area along a road is generally more open and could limit use by species that require dense forest or closed canopy.

Westshore Project

The Westshore project is a vegetation treatment that used timber harvesting and pile and understory burning to reduce hazardous fuels in the wildland urban interface (WUI) around Lake Pillsbury. The timber harvest was completed in 2013. This project reduces the chances of a type conversion wildfire which benefits Forest Service Sensitive Species.

Table X summarize the past, present, and reasonably foreseeable future actions effects on Forest Service Sensitive Species.

Table 19 - Cumulative Effects Analysis on Forest Service Sensitive Species

Species	Past Effects	Present and Reasonably Foreseeable Effects	Cumulative Effects
Northern spotted owl	• Increase of snags for nesting • Loss of coarse woody debris • Fuels reduction protects late successional habitat from torching or crown fire	• Fuels reduction protects habitat from torching and crowning • Short term loss of coarse woody debris • Treating plantations to expedite growth into late seral stands	• Enhancement and protection of late successional habitat
Northern Goshawk	• Fuels reduction protects habitat from torching and crown fire	• Fuels reduction projects protects habitat from torching and crown fire • Retention of oaks and larger tress used by NOGO for nesting • May lead to temporary displacement of NOGO	• A decrease in fire risk tohabitat
Bald Eagle	• An increase of snag creation benefitting wintering or foraging bald eagles	• Short-term disturbances to wintering bald eagles that are foraging during project implementation	• Cumulatively, past activities combined with Pine Mountain's activities will not affect reproduction or the overall range of the bald eagle
Pallid bat	• Increase in number of snags for roosting	• Short term loss of understory vegetation for foraging	• Temporary loss of foraging habitat during

Species	Past Effects	Present and Reasonably Foreseeable Effects	Cumulative Effects
	• Loss of understory vegetation for foraging		implementation
Townsend's big-eared bat	• Reduction of dense foliage for foraging	• Reduces dense foliage for forage	• Cumulatively, past, present, and future activated will reduce foraging for the bats, but will not likely affect roosting sites
Pacific marten	• Loss of coarse woody debris during fuels reduction work	• Reduces large coarse woody debris • Protected habitat from torching or crowning • Treating plantations to expedite growth into late seral stands	• Cumulatively projects may remove large coarse woody debris used for denning, but design features ensure retention of some woody debris
Pacific fisher	• Protected late seral habitat from torching or crowning • Increase of snags • Loss of coarse woody debris	• Density reduction in plantations expedites growth into late seral stands • Reduction of fuels protects existing late successional habitat	• Cumulatively projects treat stands to ensure retention of late successional habitat
Fringed myotis	• Increase in snags for roosting	• Short term displacement in immediate area of activity	• Cumulatively projects will not affect reproduction of the fringed myotis
Foothill yellow-legged frog	• protected streamside vegetation • Possible sedimentation from logging activities	• Protects streamside vegetation	• Cumulatively projects will not affect reproduction of the foothill yellow-legged frog
Western pond turtle	• Protects streamside vegetation • Possible sedimentation from logging activities	• Protects streamside vegetation	• Cumulatively projects will not affect reproduction of the western pond turtle

Determinations

The Pine Mountain Late Successional Reserve Habitat Enhancement and protection Project *may affect but is not likely to adversely affect* northern spotted owls.A *may affect not likely to adversely* affect conclusion results when the effects to a species are likely to be: wholly beneficial, discountable, or insignificant.

The Pine Mountain project maintains current habitat designations for the owl with several units being upgraded post-harvest and all units receiving long-term benefits. There are no units that are being downgraded. There will be no change in habitat types or ages of residual stands. Protocol surveys are being conducted concurrently with the development of this EIS in order to locate breeding pairs of northern spotted owls. By conducting surveys, Limited Operating Periods will be lifted from areas where there are no owls detected in order to implement effectively and adequately protect northern spotted owls and their habitat. By maintaining habitat and locating breeding owls, the effects of the Pine Mountain project to northern spotted owls will be insignificant.

It is my determination that the proposed action may affect individuals but is not likely to result in a trend toward Federal listing for the northern goshawk. Suitable habitat will be maintained post-treatment and if any breeding pairs are discovered during the life of the project a Limited Operating Period will be established.

It is my determination that the proposed action may affect individuals but is not likely to result in a trend toward Federal listing for the bald eagle. Suitable foraging habitat will be maintained post-treatment and if any breeding pairs are discovered during the life of the project a Limited Operating Period will be established.

It is my determination that the proposed action may affect individuals but is not likely to result in a trend toward Federal listing for the pallid bat. Roosting structures will be maintained post-treatment through design features pertaining to snag retention.

It is my determination that the proposed action may affect individuals but is not likely to result in a trend toward Federal listing of Townsend's big-eared bat. There are no significant roosting structures within the project area and foraging habitat will only be diminished in the short term.

It is my determination that the proposed action may affect individuals but is not likely to result in a trend toward Federal listing for the Pacific marten. Design features ensure the retention of denning structures and a Limited Operating Period will be enforced should a marten den be found.

It is my determination that the proposed action may affect individuals but is not likely to result in a trend toward Federal listing for the Pacific fisher. Design features ensure the retention of denning structures and a Limited Operating Period will be enforced should a fisher den be found.

It is my determination that the proposed action may affect individuals but is not likely to result in a trend toward Federal listing for the fringed myotis. Design features ensure the retention of snags that may be used for roosting.

It is my determination that the proposed action will not result in a trend toward Federal listing for the foothill yellow-legged frog.

It is my determination that the proposed action may affect individuals but is not likely to result in a trend toward Federal listing for the Western pond turtle. Design features ensure the retention of logs for basking structures and riparian reserve management stipulations reduce impact to the riparian area probably most commonly used by turtles.

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